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THE
ENDOSCOPE,

AND ITS APPLICATION TO THE DIAGNOSIS AND TREATMENT
OF AFFECTIONS OF THE

GENITO-URINARY PASSAGES.

LESSONS GIVEN AT NECKER HOSPITAL.

BY

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TRANSLATED BY

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THE ENDOSCOPE.

PREFATORY NOTE.

Any method of observation which enlarges the certainty and facility of diagnosis cannot fail to be of interest to the physician. Among the novelties of the present time, the *Endoscope*, like the Microscope, offers a view of the real pathology of many local affections heretofore supposed to be removed from direct observation. It may not find its way into general practical use by the busy every-day practitioner, but in the hands of experts it has already, and we predict will hereafter throw light upon many previously obscure points in pathology.

DESORMEAUX's Lectures, here presented, aside from their illustrations of the Endoscope, will be found to afford the best series of experimental observations, with practical inferences, on urethral affections that has yet been published.

With this idea, the Editor of the CHICAGO MEDICAL JOURNAL, in whose pages the translation originally appeared, has thought fit to collect the pages and give them to the profession in permanent form.

The lamentable death of Dr. HUNT, the amiable and accomplished translator, prior to completion of the work, will account for the change in style of expression in the last few pages, which were kindly translated for the JOURNAL by H. RALLS SMITH, A.M., M.D., of this city.

Chicago, January, 1868.

J. A. A.

THE ENDOSCOPE.

DEDICATION.

TO MONS. RAYER:—

Much Honored Master:—According to your advice, I have given these lessons. You thought they might be useful, and encouraged their publication. Permit me here, to place them under your protection and thank you, in advance, for the aid your name will give them.

A. J. DESORMEAUX.

TRANSLATOR'S DEDICATION.

MONSIEUR RAYER—To you, from whom I have learned so much of the little that I do know, permit me, as a mark of gratitude, to place your name at the head of this paragraph.

R. P. HUNT.

PREFACE.

Nos quoque oculos eruditos habemus.—*Cic. Parad. v.*

A most characteristic progression of the medical art, as it exists at present, consists in the endeavor to find out means adapted to the direct exploration of the different organs, the careful study of local affections by the aid of these means, and the use we can make of the physical sciences, from which we ask no more empty theories, but the application of their exactness and the means by which to procure instruments calculated

to increase and perfect the action of our organs. Percussion, instituted by Avenbrugger, popularized by Corvisart, seems to be the initiative of this path into medicine. We all know to what extent this method has reached at present; but yet it was only in its young infancy when auscultation was discovered and comes, scarcely yet invented, to revolutionize the curing art. Lænnec, a master of sciences, without counting this invention, which has immortalized his name, has had the glory, possibly unique, of creating, unaided, an entire branch of the art, which numerous and learned physicians, by constant study and effort, have only been able to extend and perfect since his time.

At the same time, Recamier, taking up the *speculum*, at that time unused, made from it his invention, rather, from the information it afforded him than from giving it a simpler and more convenient form. Collaborators were not wanting to complete his work:—First, I will mention my father, Professor Desormeaux, who found in this instrument a means of still further extending his knowledge, already great, in this branch of medicine. Later, M. Ricord, applying the *speculum* to the necessities of his specialty, used it for the purpose of establishing a fundamental point of doctrine. In a memoir read to the Academy of Medicine, he showed the possibility of discovering, even within the uterine neck, the characteristic ulceration of syphilis, which he distinctly separates from menorrhagia. At the same time, Mr. Milier modified the instrument, so as to adopt it to the various indications which it can well fulfil, used it for the purpose of enriching, by new means, therapeutics, as applied to affections of the tissues.

It was much, doubtless, to subject the interior organs to a free access of light, but still it was not sufficient; there are some parts so arranged that they cannot be examined in so simple a mode; the eye can only reach them, so to speak, by forcing its light upon them, and light borrowed from the science of physics. For the eye, the *ophthalmoscope* has been invented, *laryngoscopes* for the study of the upper part of the aëriferous tubes, and, for those cavities too narrow to admit the introduction of a *speculum*, I propose the *endoscope*. The first I drew

from it, was separating blennorrhagia from other urethral discharges, and if M. Ricord should see these lessons, he will recognize, I hope, that the *endoscope* has furnished what he desired, in his letters, from the urethroscope, to a former pupil.

When, in 1862, I was made surgeon to Necker Hospital, I found many occasions on which to continue my researches, and the *endoscope*, up to that time an experiment, soon became an instrument of practical importance, as relates to diagnosis and treatment, and was, the following year, the subject of several articles in the medical journals.

I owe, here, a special mention of a thesis made this year, by my friend and former pupil, Dr. Portella (de Fernambouc), upon *endoscopic urethrotomy*. This is the first publication on the new method of incision for stricture.

J. A. DESORMEAUX.

THE ENDOSCOPE.

FIRST LECTURE.

The Endoscope.—The Healthy Urethra.—Acute Urethritis.

GENTLEMEN:—When we consider all the improvements and inventions, having in view diseases of the urinary organs, it may be supposed that this is one of the most advanced parts of surgery; but a judicious examination of the subject proves the reverse.

Really, despite the improvements added to this branch of our art, despite the numerous researches so long continued, there are still many obscurities, many diagnostic uncertainties, and much risk in the treatment. Of this, the following pages will furnish abundant proof. But, at present, let me call your attention to calculi sacked (*enchatonnæ*), the frequency of which is so often disputed; some believe these cases very rare, others are of an opposite opinion. One, of long and extensive practice tells me that they do not exist, and another, of great special experience, regards them as very rare. If this is so, I have been most singularly favored, for twice I have found them in operating, and twice, in the last year, the endoscope has shown

them; once upon a patient of Mr. Howel, at the clinic, and once upon a patient of M. Jarjavay, at St. Antoine. M. Howel proved his case by an autopsy, M. Jarjavay verified his by an operation. Now, is it probable, if these cases are reported as so rare, that it is owing to imperfect means of discovering them?

Let us take, as another example, a very frequent disease. Nothing is more common than chronic urethral discharge. In general language, blenorrhœa, the dread of surgeons, and of patients until they determine to forget their disease and live tranquilly, thoughtless of such accidents as may one day awake them from their security; for if there are cases of blenorrhœa which spontaneously cure, or which disappear to soon return without producing much damage, there are others, and many, which end only by producing most of the grave affections of the urinary organs.

Why have we not distinguished between these different kinds of blenorrhœa?

When a surgeon is consulted for an eye, red, painful, weeping, he seeks to discover the nature of the disease, he desires to know if he is to treat an ophthalmia blenorrhagic, syphilitic, catarrhal, rheumatismal, serofulous, or simply traumatic; he is never content to diagnose simply an ophthalmia, and still less a hyper-secretion of the conjunctiva. In chronic discharges from the vagina, leucorrhœa furnishes a very insufficient term for diagnosis.

Why then should we be less difficult to be satisfied as regards urethral discharges, and apply to them, indiscriminately, the term of blenorrhœa, or confound them with catarrh, as if it was not an affection *sui generis*, in the urethra as in other organs, rarer only on the urethral than other mucous surfaces? It is, because in ophthalmia, by opening the lids to see the diseased organ, we see and conjoin the physical and rational signs. In vaginal discharge, the speculum and actual touch combined, is sufficient. In the urethra, however, sight has not, until recently, aided us to complete a diagnosis firmly based. We stand where the profession stood, on the question of leucorrhœa, be-

fore Recamier used the speculum in the study of affections of the vagina and uterus, with the difference that in place of a finely exquisite finger, touch can only be applied by means of inert instruments.

We spoke, a few moments since, of the different ophthalmias, to show what difference exists in the pathology of organs as they may be more or less accessible to view. Deep-seated affections of the eye will furnish a still better illustration. A few years since, every patient devoid of sight, without opacity of the pupil, was pronounced to have amaurosis if the pupil was black, glaucoma if the pupil had a greenish tint. The diagnosis was not difficult, but what is glaucoma, and what amaurosis? This was not known. As to glaucoma, there was complete ignorance. As to amaurosis, we know that the term covered many different affections, some seated in the eye, others elsewhere. Pathological anatomy demonstrated some of them, but they could not be distinguished on the living subject, and a haphazard, empirical treatment was resorted to. Until Helmholtz invented the ophthalmoscope, this uncertainty continued. This instrument was used for deep-seated affections of the eyes which, up to that date, could only be diagnosed by rational signs—the result is well known.

Glaucoma is at present considered a well-determined and well-decided lesion, easily understood by its symptoms, and of which a rational treatment has been instituted with some success. Under that term, many different affections have been discovered, which, studied separately, have much narrowed the domain of amaurosis, and will still more restrict it. Ask a countryman of Helmholtz, to-day, what is amaurosis, and he will not tell you “that it is a disease of the eyes, in which the surgeon sees no more than the patient.”

At the same time that the ophthalmoscope was commencing to be employed in Germany, a lucky circumstance, unnecessary to relate here, caused me too seek for an instrument that would permit of ocular examination of the urethra and bladder. The principle was soon found, but months passed before the URETHROSCOPE became the ENDOSCOPE. I ought to state that I was

not the first to make attempts on this road. At the time the speculum commenced its revolution in uterine diseases, M. Sigélas attempted to obtain, for the bladder, similar advantages, by means of two concentric sounds, the inner one to permit light to reach to the depth of the viscous, and the exterior to transmit the light of two candles reflected from a concave mirror. The results were not very satisfactory; yet, the inventor, by modifying his instrument, might have gained his end, if other work had not taken his time and attention. I learn from M. Ségalas, that when he presented to the Academy of Sciences his urethro-cystic speculum, Fresnel, on leaving, said to him, by placing the light at the side, and, by means of an inclined mirror, reflecting it according to the axis of the instrument, you will succeed. Such is the arrangement in the endoscope.

So far as I can learn, an English surgeon, M. Every, imagined an instrument much like mine, but it was never used. Of this instrument, I have never been able to procure a detailed account.

Then, Dr. Ag. Hacken, of Riga, has published the description of a dilator of the urethra, for the urethroscope. This instrument is composed of three metallic rods, all introduced together, and capable of being separated, with the ocular extremity surrounded with a funnel. The dilatation made, light was to be thrown through the funnel by means of a reflecting mirror. When a description of this instrument appeared, it had then not been tried, and I think that since it could have given no useful results. The inventor, moreover, only suggests its use for the anterior portion of the urethra, in front of the pubis. M. Hacken also proposed to examine the female bladder by means of tubes and a funnel, by which light might be transmitted as in the preceding case. Both of these experiments, I feel justified in saying, are unavailable.

Thirty years, at least, have passed since the efforts of M. Ségalas were made, and no one, to my knowledge, thought further of the possibility of using vision in the study of urinary diseases, until, in the fall of 1852, I commenced to investigate them. Towards the end of the same year, I placed in the hands

of the Imperial Academy of Medicine, a sealed paper, and on the 29th of November, 1853, I showed the instrument, about as it at present is used. I continued my attempts, and two years later, in a new communication, I gave the results of my first experiments. In 1855, the Imperial Academy of Medicine, appreciating the endoscope and what might be gained by it, rather than my services, already recognized, gave me the honor of dividing the Argenteuil prize, after experiments made before the committee.

The instrument was known, but it was necessary to prove its efficacy and adaptability. When, in its infancy, it was shown to some of my colleagues, one of whom remarked:—"We can see well with your instrument, but what is the use of seeing?" This was a question I was not prepared to answer, save by generalities, and so I thought it best to keep quiet for the time being. Now, however, after longer experience, I can say *what good sight does in the study and treatment of these diseases*.

The principle upon which the endoscope is constructed is very simple. A sound suited to the passage it traverses, to transmit the rays of light, a mirror pierced in its centre and placed obliquely at the face of the sound, for the purpose of throwing a faggot (so to speak) of luminous rays parallel to its axis—such are the essential parts of the endoscope. But, as this instrument is designed to aid the investigation of deep-seated organs too narrow for the speculum to penetrate, it is necessary to throw as much light as possible, and at the same time guard the eye of the examiner from that light. Indeed, the instrument, for examination, and especially for operations, should be manageable to a high degree, and easily directed in every way.

For the purpose of increasing the light, a plano-convex lens should be placed between the light and mirror, so as to concentrate the rays of light upon the parts of the lower extremity of the sound or catheter. Opposite to the lens, there is a concave mirror, the centre of whose spherical surface coincides with the lighting points, so as to reflect the rays of light received by it, according to their angle of incidence, and to cause them to strike the lens as if directly thrown upon it.

The means of lighting are of great importance. The luminous points near the focus of the lens are useful, the others are useless, if not injurious. Hence, it follows that we must have an intense light of small volume. Large flames will not do; candles, oil-lamps, and petroleum are useless; gazogene (a mixture of alcohol and turpentine) seems to me the best, its flame is intense but small, and the lamp well adapted to the instrument. Before I settled upon this lamp, I thought of the electric light, but it is too cumbersome to be carried around, and requires an assistant. It would, moreover, double the price of the instrument. Sunlight, so convenient for the laryngoscope, would not answer for the endoscope, because its rays cannot be controlled, and we must control light to make it useful in the employment of the endoscope.

There is yet another light that I believe may be good, but that I have never tried, it is the Drummond light. It might be useful in an amphitheatre, but would be difficult to use in private practice. Gazogene is, at present, according to my idea, the best.

[The author then goes on to describe the endoscope. To do this effectually, many terms, mechanical and physical, have to be used. Of some of these the dictionaries are often silent, others are so abstractly defined that none but a mechanician or student in natural science could understand them.]

(He says it is adapted to the study of the urethra and bladder; also of the neck of the uterus, but not of the internal surface of that organ, which cannot be explored without previous dilatation.

In the rectum, he says, this instrument lets us make profound, deep-seated examination, "so that I have been able to examine strictures beyond reach, and ulcerations also beyond the finger's touch."

He expects to publish, at some future time, the results of a pilous cyst of the ovary, with a fistulous opening, frequently examined by the endoscope. In wounds, this instrument, he says, may be very useful. Though a bullet may be recognized by the common sound, we may be called on to see it.)

Now let us commence the study of the urethra:—

In the commencement of this subject, let me call your attention to the fact that the ENDOSCOPE does not act as a substitute for all other means of exploration, but only completes them, in adding touch to sight. Thus, before using the endoscope, we should use all other means of exploration, and especially of metallic sounds and of bougies with rounded ends. This examination will prove useful, not only as to our diagnosis, but will also direct us as to our use of the endoscope. Thus we will find out the sensibility of the canal, its deviations, and the obstacles which it presents; we can pursue the points upon which we should especially direct our attention.

If the canal is free and readily admits the sound of the endoscope up to the bladder, we should take advantage of it, and examine its whole length. If there is nothing to indicate to us the seat of the lesion, we may rest assured that we will find it, and if any sign, such as exalted sensibility, denotes a local affection, a complete examination will serve to show if any other point is affected.

An endoscopic examination should, as far as practicable, be made in a darkened room, as should all other examinations requiring artificial light; though a demi-obscurity will often answer, complete darkness is the best. As for position, the patient should be placed as if to be examined by the speculum. That position is well understood by all.

Before proceeding to the examination, preparation must be made for cleaning out the part examined. This is done by carded cotton so carried in as to wipe out all fluids calculated to obscure the view and keep it off the diseased structure.

All being ready and the patient properly placed, the sound is gently introduced as far as the vesical orifice. This we can judge of by the direction it has taken, by the depth it has penetrated, and also by the resistance it has to overcome before going farther. This resistance once perceived, we should be careful not to overcome it, for fear of going into the bladder and filling the sound with urine, and to empty it is an operation fatiguing alike to surgeon and patient.

It is unnecessary to say aught about the introduction of the sound. The introduction of the endoscope must first be based upon a knowledge of introducing this common and important instrument.

In moving the endoscopic sound forth and back, it will be found necessary to remove, by pledgets of lint or of cotton, such fluids as may obscure the view of the mucous membrane, be they mucosities, or only the oil used in greasing the instrument.

Whenever anything diseased is thought to be seen, it is necessary to clean out, and sometimes it may be well to pass the instrument near the bladder. By such movement, there is a change in the appearance of the mucosity under the lights, and certain details may be detected which would otherwise escape notice.

It sometimes happens that, in removing mucosities, the cotton, badly fixed, slips off. If the examination is over, withdraw the instrument and the cotton is thrown out at the first urinal emission; but if the examination is not over, if it is feared that the stream of urine may be too weak to throw it out, or if it is impregnated with a caustic which we do not wish to continue too long in the canal, it can be easily removed. In case of a preconceived obstacle, once reached, do not attempt to pass it. That is generally the point to study it, and the anterior portion of the canal can be investigated in withdrawing the sound.

To understand the diseased condition of the urethra, we must first understand its healthy appearance, and then we will commence.

The internal surface of the urethra, in its healthy condition, is smooth and polished; the endoscope shows neither the lacunæ of Morgagni, nor the orifices of the excretory ducts which cover its surface. This can be readily understood by the difficulty of finding them, even when the canal is largely opened; fortunately, it is not necessary to see them unless diseased. The same is true with reference to the ejaculatory canals. I know it has been claimed that they could be seen by means of the endoscope, but I have never done so, and I must think that an observer, in such cases, has been a victim to illusions which he

might have avoided if he had kept more in mind the rules of examinations and dissections. The verumontanum is not visible; at least, I have never seen it, and I think its lack of consistence renders it liable to be obliterated by the sound.

Generally, authors describe the appearance of the urethra according to its appearance after death, thus, according to them, its color varies in its different portions. These different colorations are all of cadaveric origin. The blood, obeying its weight, collects in the most dependent parts, and soon, by imbibition, stains parts less elevated, whilst all others, more elevated, remain uninjected.

M. Sappey understands this; by removing the blood from the veins, by means of water injections, he has, in a manner, proved that the mucous membrane is without color throughout its whole course, MM. Rieker and Jarjavay describe it as slightly yellow. Such is, undoubtedly, its color during life; only this yellowish tinge, which is the foundation of the coloration, is more or less intense in different persons. It thus takes on very much the complexion tint of the skin, a circumstance often mentioned by those to whom I have shown the healthy urethra. This tint is uniform from near the meatus, where it is more red.

It is generally believed that the mucous membrane of the urethra forms longitudinal pleats. This opinion is the result of opening the canal lengthwise, or else by dividing it transversely by sections. This last is certainly the truest method, as the first-mentioned permits the mucous membrane to pleat in any but a natural way. Transversal pleats have also been described: M. Sappey denies their existence, and attributes their discovery to a desire to make a name. I must say that such reasons have often been used to excuse the difficulty of penetrating to the bladder with a small-pointed sound, and that too though a healthy condition of the canal existed—these pleats may be produced by the improper introduction of this sound. I must confess to have sometimes, formerly, encountered them, but I attribute them to the before-mentioned cause. The endoscope has never shown me anything like them. As to the longitudinal pleats, they are not very marked, but they can be seen by

the endoscope. In withdrawing the instrument and following the axis of the canal, the mucous membrane can be seen to contract upon the end of the sound, but when these pleats form after the urethra has lost its elasticity, they are at a certain distance from the instrument. Thus the walls of the urethra, in closing, form a funnel, the summit of which is truly pleated like a (*cul de poule*) pullet's tail.

These pleats are not so regular as anatomists generally state them to be; their number and disposition is irregular, they vary according to the direction of the sound, and by pressing the sound upon different points of the urethral circumference, this linear contraction can be caused in the part pressed. It is necessary to be familiar with the manner in which the urethra closes over the sound, for if it does not do so uniformly and regularly, we must believe that there is a pathological alteration, by which the suppleness of the walls of the urethra is impaired.

Now that we know the normal condition of the urethral mucous membrane, as shown by the endoscope, we can investigate the diseases of the same membrane. Let us commence by acute urethritis, a disease which plays an important part in urethral pathology, and which may, in some means, be considered as the father of many complaints.

Writers have frequently confounded urethritis with blennorrhagia; this, I think, is a great error. Urethritis is a disease, an inflammation, produced by many causes. Blennorrhagia is a disease produced by a special or specific cause, and transmissible contagiously, always preserving its peculiar characteristic of transmitting effect to cause, or, if you wish, cause to effect.

Blennorrhagia being more frequent than all other urethrites, may possibly be the cause of all the confusion existing in this diagnosis. Now we must state that, according to the symptoms alone, the difference is slight, and only found out in the march of the disease, and its cause, when chronic and when the lesions are consecutive. So long as the acute stage continues, inflammation dominates and masks the peculiar characteristics of each affection.

In this respect, urethritis is like other inflammations; similar examples exist in all the organs. Suppose, in a case of orchitis, seen for the first time, you wish to distinguish, at once, the class to which it belongs, many times you cannot tell whether it is due to a contusion, a blennorrhagia, to epidemy—or mumps and consequent inflammation of the testicle, or if it is the commencement of a tuberculous orchitis; if closer and more decided examination of causes, and of other organs, does not enlighten the diagnosis, it will be necessary to abide your time, until the progress of the disease may enlighten you. Is another example needed, the pathology of arthritic blennorrhagia differs but little from orchitis, and it is not difficult to find cases in which we cannot tell the origin of the disease. When a knee is painfully inflamed, with acute or sub-acute effusion, attempt, throwing aside causes, relying only on the local symptoms, to decide if the arthritis is rheumatic, traumatic, or blennorrhagic; this you can but rarely do, and oftentimes the march of the disease will not enlighten you. I recollect a case at the Cochin Hospital, embarrassed with such symptoms as to render it almost impossible to distinguish the kind of arthritis I was treating; the inflammation was not very acute, there was but little fever, and, though the knee was the seat of a painful effusion, the patient, according to his say-so, had only felt a sensation of weariness, the result of overwork, by which to explain his feverishness. The local symptoms consisted in a hydarthrus, with considerable pain, caused either by motion or pressure; at first, the skin a little warm, but not red. Now for the cause: the patient had an old blennorrhagia, had frequently felt rheumatic pains, and, when attacked as I mention, was engaged in weeding in damp ground, the affected knee being down. I must confess that the patient was cured without my ability to diagnose whether the arthritis was blennorrhagic, rheumatismal, or traumatic.

These examples are sufficient to show that in relying alone, as has been proposed, upon a concurrence of the symptoms, for the purpose of establishing the nature of urethritis, we may be deceived, as has happened, and confound under the same name

traumatic, hepatic, catarrhal, blennorrhagic, and other discharges. If the term blennorrhagia is to be employed as the designation of all urethral discharges, then I cannot tell how to term that species of urethritis which is the common, the most important, and the best characterized, that which is generally understood by blennorrhagia. We will acknowledge inflammation of the mucous membrane of the urethra can be caused by whatever may give rise to inflammation of other mucous surfaces, but at present our attention will be especially directed to blennorrhagia, the most important, and we will only touch upon the others, for the purpose of distinguishing. It is not intended to give here a complete history of this disease, but to seek what lights the endoscope can add to those already possessed by science.

What I just said of the different inflammations of the urethra will find its proof in what is to follow on the same subject, but for the present, we must admit, in anticipation, that by blennorrhagia, we understand a disease always due to contagion, and which, in its complete development, if it does not cure spontaneously, or by proper treatment, passes to a chronic stage, and finally terminates in stricture of the urethra, which is its last stage, as a cicatrix is the last stage of ulceration.

Some days after contamination, the patient feels a burning towards the meatus, then itching, and then pain, which rapidly increases. The lips, too, of the meatus are glued together by thick mucus. The pain soon extends up the urethra, the entire length of which it invades in a few days; and it can even reach the neck of the bladder, where it produces symptoms which we are not here called upon to study. We only mention the tendency of the inflammation, commencing at the meatus, to extend to the superior parts of the canal. In proportion as the disease extends, the discharge increases, becoming yellowish or greenish, according to the intensity of the inflammation, to again assume the white color of muco-pus as the pain diminishes. Endoscopic observations have enabled me to follow the march of the disease, and to recognize by the sight (*de visu*) the characters of the inflammation. During the first few days, whilst the disease is in its most acute stage, the examination is impos-

sible, on account of the intense pain caused by the introduction of the sound. The most recent case that I have examined was of eight days standing, and it is rarely we can explore the urethra so soon as that. At that period, the inflammation extended to the anterior half of the canal; through this extent the mucous membrane was of an intense redness, it is without polish, and presents the appearance of the superficial which form upon the glans in balanitis; in other words, it had the appearance of a mucous membrane inflamed and derived of its epithelium. In more advanced cases, the lesion does not change its character, but extends nearer the posterior portion of the canal. It finished, in this way, by successively reaching the bulb, the membranous portion, and the prostate portion, which I have only found diseased after six weeks or two months duration. At this period, an important phenomenon takes place, one which all of the exterior symptoms would not lead us to anticipate. The anterior part of the urethra re-assumes its healthy condition. In some cases, indeed, whilst the inflammation possessed all of its peculiar characters in the bulb and membranous region, the anterior portion of the canal presents a polished surface and natural color. The prostatic portion, in which this disease may also locate itself, was also cured in many cases, for it has frequently happened that I have found the characteristic lesion confined to the bulb, whilst the anterior and posterior portions were healthy, in cases which had presented all the signs of an extension of the disease to the prostate and neck of the bladder. I have several times had occasion to exhibit analogous cases in this amphitheatre.

Reduced to a limited extent, the inflammation seems to become deeper seated, the redness of the mucous membrane is more pronounced, its surface more uneven, its surface is not simply unpolished, it presents salient points more and more numerous, and tends, too, to take on the characters of the lesion, that we will soon study in speaking of chronic blennorrhœa and of commencing strictures. In a word, at this period of its march, blennorrhagia is upon the point of passing into the chronic state, if it has not already reached it. We will follow its ulterior evolutions in our next meeting.

But I must, at once, cause you to observe that it is difficult to admit, as has been attempted to be established, that blennorrhagia propagates itself by an inoculation, step by step, little by little, of the secreted matter, since we see parts retake their healthy status and not again become diseased, though constantly bathed by the muco-pus coming from uncured portions.

We can conclude, from these observations, that those authors who, like M. Cruveilhier, state that the discharge comes from ulceration, are entirely right, as the mucous membrane presents all of the characters of superficial ulceration. But let us pass to the study of the lesions which may be confounded with the one we have just described, and let us commence by recalling the fact that in acute inflammation the local mucous lesion varies little or none, according to circumstances, and the distinctive local characters scarcely commence to show themselves until the malady passes into the chronic stage.

Acute urethral inflammations, not blennorrhagic, are due to causes traumatic, herpetic, or catarrhal. Traumatic urethritis is almost always caused by solid foreign substances introduced into the canal, either accidentally or with a surgical intention, such as sounds or bougies, or by fluids, as injections. Such cases of inflammation are rarely very acute; often the endoscope shows only a simple redness of the mucous lining, which otherwise retains its natural smooth condition; if greater acuteness occurs, the epithelium becomes detached and the red surface is at the same time roughened, as in blennorrhagia. The tendency of the disease is towards cure as soon as the cause is removed, it does not migrate towards the interior, as we just described, and becomes extinct through its whole extent at the same time, without contracting upon one point of the urethra. It must be understood that we are now speaking of simple traumatic urethritis, and not of that which, finding in the membrane alterations consecutive to blennorrhagia, excites their reëpppearance and leaves them to continue after they (the traumatic) are removed. This subject will soon be rendered clear by the study of the endoscope in blennorrhæa.

Herpetic affections can, undoubtedly, cause acute urethritis.

Acute herpes, especially in children and men who have not had sexual intercourse, is one of the most common causes of balanoposthitis, and discharges are frequently met with which it seems impossible to refer to aught else than herpetic patches in the canal. But, up to the present, I have not directly observed them, at least in acute discharges, though they may be seen in the chronic flow. I will only remark that, in such a case, the affection presents all the mobility of acute herpetic diseases, and there is such difference in the march and irregularity in the seat, as sometimes to guide in the diagnosis.

Catarrhal urethritis seems to be rare, as I have already stated. I have only met with two cases in the acute state, or, if I have seen it in other cases, twice I have observed it under such circumstances that I was perfectly sure contagion had nothing to do with its etiology. In my two cases, it seemed like the last phase of an acute general catarrhal affection; in one of them, then my companion and now my confrère, the disease commenced as a coryza, then extended to the bronchia, then to the digestive organs; at last, after more than three weeks, just at the moment when, the intestines throwing it off, the patient thought himself cured, the fever greatly increased, accompanied by pain in the kidneys, then a vesical catarrh, and, at last, by an acute urethritis, which, in its turn, disappeared, having resisted both copoba and eubebs. In this case, and in the other, which it is unnecessary to relate, the urethral pain, starting from the neck of the bladder, extended through the whole length of the canal, following a route inverse to that demonstrated as usual in blennorrhagia. This march, I think, may be considered as constant in urethral catarrh, and can serve as a diagnostic base.

Though, in acute urethritis, with which we have just been occupied, the endoscope does not play so important a part as in the chronic affections which will be the subject of the ensuing lectures, I believe, however, that we owe to it the ability to establish a marked separation between affections generally confounded, and of the diversity of which, I think, you can no longer be doubtful. This distinction will soon be more clearly

drawn, and will enable us to comprehend how an affection, hitherto regarded as unique, in spite of the absence of sufficient signs, is sometimes contagious and sometimes not, disappears in one case not to reappear, and in another returns without apparent cause, and continues indefinitely without giving rise to grave lesions, and at other times terminates in stricture and its consequences.

SECOND LECTURE.

Blennorrhœa.—Granular Urethritis.

GENTLEMEN:—In our last lecture, we studied the lesions produced by blennorrhagia, from its inception to the moment when it loses its acuteness. We will now proceed to investigate the chronic discharges from the urethra, and, as we reserved the name blennorrhagia for the contagious affection for which it was created, so we will call blennorrhœa the chronic discharge, only, which springs from the same cause. and we will endeavor to distinguish from it especially the herpetic discharges, which have often been confounded with them, and which, by their lightness, should be to us only a secondary consideration.

Discharges of a blennorrhagic character, though often so slight as to attract but little attention, are the cause of almost all strictures, by a mechanism, the study of which we can make by the endoscope. If authors have not insisted more upon this fact, and if some have not even perceived it, it is not only because blennorrhagia generally presents symptoms too slight to attract attention, but it is also because discharges from other causes, and especially herpetic, confounded with them but without the same consequences, obscured the question and rendered it difficult to perceive the connections. And this confusion, we must acknowledge, was difficult to avoid, for, without endoscopic aid, the symptomatic differences are almost null, and certainly not sufficient to establish a diagnosis; so nothing was left but the march of the disease and the concomitants give us any clue to its nature.

We left blennorrhagia when it was confined to the deep-seated urethra, when it was fixed upon the bulbous, membran-

ous, and prostatic portions, when, at the same time, its acute symptoms were gone. According as it may persist in either of these regions, its sequences differ; so we will, at present, investigate the evils attendant upon the bulbous and membranous regions, reserving until later those peculiar to the prostate.

Blennorrhagic symptoms, when once weakened, become more and more so, so as ultimately to be scarcely recognizable or perceptible. The pain becomes more disagreeable than truly painful, so much so that patients often compare it to a disagreeable heat or burning, to a weary tickling, deep seated in the perineum, to points corresponding to the bulbo-membranous portion of the urethra. This sensation is rarely continuous; it generally occurs when the urine is about to be evacuated, and continues for some time afterwards. Often it is perceived before and after but not during micturition. Some patients do not feel it at all; but most frequently when they say it is not felt it is for want of attention, which, once called to the fact, they perceive it, as do others.

The discharge follows, in its decrease, the same march as does the pain; in some lymphatic temperaments, there are a few drops of a turbid, whitish, slightly opaque liquid, which may spontaneously escape from the meatus and not soil the linen; but generally this matter is so scarce that, without exacerbatation, it is completely cleaned out by the urine. Sometimes it can be recognized in the form of filaments thrown out by the first jet of urine and found swimming in the urinal. If we wish to be assured of the existence of this discharge, it must be sought for when the patient has not for some time urinated, and especially in the morning on awaking; then, in pressing from behind forwards it is rare that we do not bring out a drop of tenacious fluid, limpid, or slightly turbid, small, usually, but visible between the lips of the meatus, which we also find generally glued together by a dry mucus, be it during the day or only in the morning; or there may exist no trace of discharge, other than viscous filaments, which extend between the lips of the meatus when they are separated.

A last sign experienced by the blennorrhagic patient, is diffi-

culty in emitting urine. This difficulty, often very great in the acute stage, diminishes and finally disappears, so that the only trouble which remains for some time is the bifurcation and gimlet twist of the urinary jet. These two phenomena, which only occur accidentally in the healthy state, are due to the viscous mucus which sticks to the walls of the urethra and resists the first impulsion of urine, but this is only temporary; after an uncertain and unfixed time, the urine is thrown not so far, the jet is smaller, the bladder is more slowly emptied, the patient experiences a dysuria, which, if left to itself, goes on increasing.

To the acute inflammatory swelling which caused the first stricture, a chronic lesion succeeds, which favors a swelling slow in its march, but continuous in its progress, and which will, sooner or later, produce stricture with all of its consequences. Hence, we can foresee that, in every blennorrhœa, there will be stricture. Indeed, such is the case, whenever the lesion is not confined to the prostate; but we must expect to find a stricture, as it is generally understood, from the commencement. A stricture, such as will arrest sounds and bougies, is only found at a more advanced period. When blennorrhagia is near its commencement, the swelling is slight, there is, possibly, only a rigidity of the inflamed surface instead of its natural suppleness and rigidity; it is necessary, for the purpose of finding an obstacle, to use a bougie of proper size, with a bullet end, and to use it dexterously and carefully; then, in advancing upon, or withdrawing towards, from behind the lesion, a gentle resistance is felt, and the patient complains of a slight pain which he does not experience, save when the bullet end of the bougie is attacking the stricture.

The bullet bougie also is capable of aiding us in our diagnosis of urethral ulceration; it is rare that, when it encounters the characteristic ulceration of blennorrhœa, it does not show more or less of a bloody tinge, though no violence, sufficient to wound the membrane, has been used.

If we now establish a comparison between blennorrhœa and herpetic discharges, we will not find, in the symptoms just related, sufficient wherewith to establish a positive diagnosis.

The discharge is not different; the pain is more itching than otherwise, but this characteristic, though often well appreciated by the patient, is too slightly marked for us to attach much importance to it.

The urinary jet is not diminished by the herpetic plates, and the bullet bougie does not give evidence of their existence: the first of these signs is absent in commencing blennorrhœa, and the second is so slightly marked that its absence should not affect the diagnosis. In fine, these symptoms, interesting in the study of the disease, cannot enable us to diagnose between the different species of discharge, if the endoscope did not aid us in the discovery of the blennorrhœa.

In our last lesson, we saw that blennorrhagia, in its chronic state, fixes itself in the bulbo-membranous portion of the urethra, and that the mucous membrane of the diseased part, at first simply unpolished, soon becomes rough and uneven; these inequalities increase, multiply, and, in the end, become more prominent, and granulations are formed. Then the diseased portion presents a surface dark red, uneven, sown with rounded granulations, sometimes separated far apart, and then at other times so nearly together as to cover the entire diseased surface. The membrane, at this point, presents the appearance of a mulberry, according to the spontaneous remark of one to whom I showed the lesion, as well by reason of its color, as on account of its granular aspect. The granulations vary in size from a grain of mustard seed, to that of a grain of millet, or even still larger; the smallest seem to be of more recent origin.

In the cases we are now speaking of, the lesion confines itself to the bulbous and membranous portions of the canal. They constitute what we may call granular urethritis, which shows some resemblance to granular metritis, and still more to granular conjunctivitis, owing, doubtless, to the fact that, in anatomical disposition and vital condition, the urethral membrane more nearly resembles the conjunctiva than the membrane of the uterine neck. It is impossible, when we examine these three affections, not to perceive a similar lesion in all, the expression of a like malady in three different organs. The granulations

are almost always of a dark red color, often like wine settlings; but sometimes I have found in their midst other granulations, less numerous, small, and of apparently a greyish color, such as might bring it still nearer to the conjunctival granulations, as described by M. Wecker. We will return to this similitude.

These granulations may occupy more or less of the length of the canal, most frequently from a quarter to half an inch, sometimes the whole posterior part, from the termination of the spongy portion to the vesical orifice; but there is one characteristic almost ever present, it is a unique lesion, be it ever so much or so little extended, there is no interruption between its two extremities, there are no isolated places, separated by healthy surface. The granular ulceration is only found in a single point, more or less extensive; before and behind the diseased portion there is a redness that diminishes as it recedes from the seat of the granulations.

The herpetic ulceration is very different, and, with some attention, it can be readily recognized. But, before entering upon this subject, gentlemen, I ought to advise you, that if I use the word herpetic, it is only because this species of ulceration corresponds exactly with the herpetic plates that we observe upon the skin, upon the lips, and the neck of the uterus, and not because I regard them as products of the darts of affection. On the contrary, I think that many of these ulcerations are of an arthritic nature, according to the circumstances under which they are produced, and the characters of the external eruptions with which they are often allied. I adopt in this, the ideas of M. Bazin upon gouty affections.

Not yet having the local signs which will enable me to distinguish between arthritic and herpetic ulcerations, I confound them together under the most popular denomination. Generally, the herpetic ulcerations are multiple, they are found in different parts of the canal; besides, they have a fleeting character, such as are seen in aphthous affections of the mouth or on the uterine neck. The patch which we have found in our examination is not often re-found, but others are found in different places. These ulcerations differ from the granular spe-

cies, by being generally of much less extent. We must add that the characteristics are different; their surface is not granular, often it is only unpolished, as in the case of aphtha attacking the inside of the jaws, or in those cases where plates of epithelium are removed from the mucous membrane, as is frequently the case in the buccal membrane with those who smoke much. They approximate, then, blennorrhagic ulcerations of recent date, but the characteristics which I have just given you are distinguishing, and, moreover, we cannot confound them, if we remember that in blennorrhagia the ulceration appears to its best advantage when the inflammation is still at its most acute stage.

There is still another form of herpetic urethritis, which seems to be more deeply seated; of this I have just shown you a case. The ulcerations presented by this affection vary less, as to their seat, than the preceding; they are of uneven surface, and, without attending circumstances, a superficial examination would induce us to call them blennorrhagic ulcerations, just forming; but a more considerate examination shows us that, instead of prominences, the irregularities are caused by depressions. Whilst the granular surface may be compared to a mulberry, it is more like the depressions which we find in an orange skin, or in a tailor's thimble. Before going further, permit me to compare these affections of the urethra with similar affections of the uterine neck. In this last organ, granular ulceration is the same as in the urethra. Since I commenced studying the distinctive characters of this affection, about five years ago, at the Loucaine Hospital, I have never seen, upon the same subject, but one kind of granular ulceration, commencing in the lips, or else in the cavity of the neck, and extending more or less, but never separated by healthy surfaces.

The herpetic plates are most frequently multiple, and irregularly scattered upon the surface of the neck, and often show depressions and small cavities, such as we have just described, and such as we have compared to those on a thimble. When we examine, on the uterine neck, very recent herpetic eruptions, we frequently find small vesicles grouped; but if on the mor-

row an examination is made, the vesicles are not seen, but, in their stead, gutters, (*capules*,) the formation of which is, to my understanding, very comprehensible. Though I have never seen these vesicles in the urethra, I think these same gutters (*capules*) should form there by the same mechanical influence; but they must be less persistent, on account of the different anatomical formation of the two different organs, and, consequently, less easily found. But they constitute, no less, a decided point in differential diagnosis. The distinction which we just established amongst the different characters of discharge, often confounded, and which the employment of the endoscope enables us to refer to lesions of very different natures, will enable us to comprehend the peculiarities which have been observed in the march of blennorrhœa, as it has generally been understood. Blennorrhœa, or granular urethritis, synonyms, according to my view, are partially chronic in their nature and tend decidedly towards stricture.

The pain, or rather the tenderness, which replaces it, augments or decreases with time only; the same is true with reference to the discharge, but the trouble in discharging the urine goes on increasing, and dysuria, at first slight, insensibly increases to an extreme degree, until stricture is entire and complete. The course of this disease is affected and influenced by but few extraneous circumstances. Atmospheric influences and changes of the seasons are without visible effect; improper diet and fatigue are alike inert to produce an increase of pain or discharge, but sexual intercourse will increase the violence of the symptoms, and often re-bring, for some days, a sub-acute inflammation. When the affection is of long standing, and a stricture, already formed, is surrounded by an inflammatory engorgement, too much driving, horseback, or carriage exercise may increase the dysuria. The same is true, with reference to an excess at table at any time, but a few days puts all right, and all goes on in its uniform order.

We see, also, discharges which completely disappear and then reappear, with all of the accompanying pains, and know no reason for it; we see them, not very rarely, break out once or

twice a year, sometimes more frequently, but always about the same epoch, most frequently in the spring, and then in the autumn; and then, if I follow my own experience, winter succeeds, third in order—the hot season is least of others prolific in such cases. I have met with cases recurring every spring, for several years, forming what is called repeated blennorrhagia (blennorrhagia à répétition); others, I have seen, after a considerable lapse of time, and especially after a decided change of weather, to harsh, cold, or damp. In similar cases, the endoscope will show in some part of the urethra, be it above or below, frequently in many points, herpetie patches such as I have described, but it will not show granulations. The season most favorable to the production of rheumatismal affections is most favorable to the production of this, thus I will call your attention to the propriety of connecting these affections with those of the tegumentary system, classed by M. Bazin as arthritie (*arthritides*).

Does true blennorrhœa ever reäppear? Decidedly not, provided the cure has been complete; but if granulations remain after the external symptoms have almost entirely disappeared, we often find a variety of repeated blennorrhagia (blennorrhagia à répétition.)

For a long time, I saw a patient who had left off treatment before the cure of the granulations. According to his own expression, there was a slight humidity of the urethral canal, and the emission of urine was slightly disagreeable, but so little as not to cause any especial annoyance. Each time, however, that he had concupiscent connection, he asked of me the aid of the endoscope, which always showed granulations as large as ever. Traveling, drives, and horseback exercise produced no effect, but, invariably, sexual connection brought on a relapse. Similar cases are not very rare, you have all seen men who cannot employ their genital functions without becoming subject to a discharge; whenever I have examined such, I have inevitably found urethral granulations.

As I have already said, the march of blennorrhœa is essentially chronic; we will follow it in our next lecture, up to the

moment of its disappearance, after having produced stricture; but without proceeding so far it may last months, and even years, without losing its granular character. I will here mention the particulars of a case in which the granulations continued for above eleven (11) years. I have seen cases of longer date, but the following, the first of the kind subjected to an endoscopic examination, furnishes a complete example of the affection:—

D. came to me in October, 1855, with an acute orchitis. He assured me that for a long time he had not had blennorrhagia, but a slight and clear discharge remained as a sequence of an acute blennorrhagia contracted in 1846. Generally he paid no attention to it, but whenever he squeezed his urethra before urinating in the morning, some drops of clear but stringy fluid were discharged. I soon found out that his urinary jet was very small, twisted, and fell almost vertically. The epididymitis once cured, the patient, somewhat embarrassed by dysuria, submitted to a full examination. In the bulbous portion of the urethra, I found, by aid of a bougie, a stricture, the passage of which was painful and blood came back on the bougie, the retracted part of the urethra was about four lines in extent. I applied the endoscope, and found, at the point of the stricture, an inflamed surface, red, and covered with granulations of the size of a grain of millet, some larger, some smaller. In a word, the case was similar to an affection of the uterine neck. In withdrawing the sound, the granulations disappeared and a temporary redness only remained; all other parts of the urethra were healthy to the meatus.

Once this lesion found out, it strikes me that the nature of the disease is explained; it is easy to comprehend the persistence of a discharge kept up by granulations similar to those often found in the conjunctiva and uterine neck. This ulceration also accounts for the chronic subjacent engorgement which produces the stricture. These granulations, so often found, notwithstanding what many authors say, these persisting discharges often complete dilatation of the strictures to which they were attributed, and which reappear as soon as the use of bougies is stopped, are the cause of this trouble.

Although I concluded to treat this lesion of the urethra as I would a similar one in the uterine neck, and following from cause to effect, as existing between ulceration and stricture, I concluded to use no direct means against the last named.

The endoscope, moreover, enabled me to act upon the diseased part, as we do by means of the speculum upon a diseased uterine neck. A concentrated solution of nitrate of silver, placed upon the diseased points by means of a canula, and the effects of which I could verify by sight, sufficed. These cauterizations were repeated every three or four days. During the interval, the patient used an injection of the decoction of roses (*de peonies*). Though the injection was one part of silver to three of water, the pain was moderate.

This treatment, commenced the 5th December, 1855, was continued more than a month, when, on the 25th January, 1856, I passed the sound into the bladder. It passed the stricture without my perceiving any obstacle, and filled, entirely, the whole anterior portion of the urethra. Thus, it was evident that the stricture had disappeared, simply because the granulations had. I could then examine the whole of the urethral mucous membrane, from end to end. The prostatic region was slightly red; this redness was never decided in the membranous portion, and towards its union with the bulbous; granulations, somewhat ulcerated, were found, but scarcely visible. Moreover, the patient assured me that he urinated as well as when young. These cicatrizations were sufficient to abolish all trace of these granulations; then he continued the treatment for two days and then stopped. A few days afterwards, the discharge ceased entirely, and the bougie, upon its introduction, met with no obstacle. The endoscope showed only a slight redness in the affected part, and at the same time the stricture had disappeared without any special treatment. This case I have watched for eight years, the cure is complete.

I have described to you, gentlemen, the normal form and appearance of the urethral granulations; but they do not always present the same characters, as you will see in the future. Really, in many of the granular affections of the urethra, the

granulations swell, lose their hemispheric form, become softer, and take on the appearance of fleshy granulations. Then, in the field of the instrument, we find a surface similar to that of a suppurating sore. The movement of the sound will enable us to judge of the consistence of these conical formations (*bourgeons*). When this transformation takes place, the discharge becomes more abundant and more purulent, so much so as to stain the linen. It seems that the erosion is deeper seated, even ulcerated, at the same time it much more readily bleeds. This alteration may be much more complicated: the depressions may become larger, softer, more unequal, nearer together, and of a dark red color (*lie de vin*), the ulceration takes on a fungous form, bleeding at the slightest touch, and of sweating blood, as it were, so as to conceal the other parts; wiped off, it almost immediately reappears, scarcely giving time to see the ulcerated surface. It is not even rare to see these fungosities bleed so readily, that the gentle passage of a bougie may cause the discharge of blood from the meatus. This same form of granulation is found in the conjunctiva, but it is especially and frequently found in cases of granular metritis. Thus, we find this same granular affection in the same organs most frequently attacked. When, by means of caustic applications, the vegetating character of the surface is lessened, the granulations retake their ordinary appearance and furnish evidence of the true character of the disease.

We have seen that these granulations last long; left to themselves, they cure, leaving after them a lesion which remains as long as a cicatrix after a wound. Let us now proceed to study their termination. They cannot exist without a sub-acute inflammation in the mucous and sub-mucous tissues; hence, the swelling of these parts, and, consequently, the stricture, a stricture at first scarcely observable, but which, gradually increasing, ends by becoming a decided obstacle to the emission of urine. During an uncertain period, this swelling, increased by the infiltration of lymph, not yet organized, forms of itself the stricture. If, at this time, the granular ulceration is cured, the ulceration disappears and, consequently, the infiltration and

stricture are relieved. The length of time during which the tissues may retake their normal condition is, sometimes great. You may remember a case I mentioned to you, in which the coarctation yielded upon the cure of the granulations, after a continuance of more than eleven years. However, so long as this condition lasts, during which the infiltrated fluids are susceptible of reabsorption, it is impossible that they remain indefinitely in the tissues without producing changes analogous to those which are produced in external parts which may be the seat of chronic irritation, such as indurations or callosities. Besides, the inflammatory action will have reached the fibrous tissues which partly compose the urethra. Now we know that the fibrous tissue contracts under the influence of slow inflammation; thus, here is another cause of stricture, as demonstrated by M. Guérin.

When blennorrhœa has reached this point, the endoscope still shows the existence of granulations, but to cure them will not suffice to relieve the coarctation; the granular ulceration no longer controls the morbid effects which it has caused, and these effects continue to progress, independent of their exciting cause. In addition, without proper treatment, the granulations will not yet disappear. The infiltrated fluid becomes slowly organized, new fibrous elements are developed, as also elastic fibres, which, added to the fibrous tissue already retracted by the existing inflammation, causes the formation of a tissue similar to that of a cicatrix, or, rather, a true inodular tissue which takes the place of the healthy one.

In this transformation, the vascular element considerably lessens, so that the mucous membrane in that part loses its inflammatory redness and becomes paler than natural. But this is not the only change. The granulations disappear from absorption, ulceration, or because of the atrophy of the vessels which nourished them. As they disappear, the membrane, whose structure they have destroyed, takes on the appearance of a cicatrix, similar to a subjacent layers. Then the blennorrhœa is ended, the granular urethritis has terminated, and inodular stricture takes its place. It is useless to press upon your atten-

tion the parallel which exists between these granular affections of the urethra and those of the conjunctiva. Keeping in view the different functions of these two organs, we readily see that the march of the disease, its effects, and its termination are essentially the same in the two cases. It is impossible to state the time necessary to heal the affected parts.

Sometimes, a year or more may pass before the infiltrated material proves itself perfectly organized; again, several years may pass before the disorganization of the affection can reproduce disease in which the termination shows a decided change. We have already mentioned a remarkable case, in which granulations continued for over eleven years, which yielded at length to proper treatment. But, on the other hand, we have seen cases with a remarkable slowness in adapting themselves to their cause.

A lieutenant in the French army, contracted a blennorrhagia in Bohemia, when this province was in the possession of France, say in 1813. When he consulted me, in 1860, he had a retention of urine, which had increased for some years. Moreover, since his first clap he had no other, but he had always had a slight discharge, to which he had paid no attention. His stricture yielded readily to the passage of bougies; but from day to day all that was gained was lost. I then supposed that the endoscope would be necessary for a correct examination and that ulceration existed. I really found the membrane very red, and many granulations, without the characteristic signs of stricture. In the treatment of the granular affection, attention must, of necessity, be paid to the ulceration; but for the purpose of conquering the stricture, dilatation must be resorted to. After the cure of these granulations, there is no rapid return, and thence patients are satisfied in passing, at long intervals, a large-sized bougie, which rarely meets an obstacle. Sometimes this granular urethritis may run on for forty years, without reaching its period of stricture, except at its second period, or stricture, where the former effusion is dependent upon a pernicious affection. I mention this fact as the longest limit of the disease, as reported by M. Ricord.

THIRD LECTURE.

Complications of Blennorrhœa.—Strictures.

GENTLEMEN:—We have followed blennorrhœa from its commencement up to its disappearance and when stricture succeeds it. Before examining and describing this disease, let us give some time to those cases which may complicate the preceding periods. The peculiar complications of blennorrhagia are cystitis, ophthalmia, arthritis, and orchitis. I shall spend but little time upon the first three named affections.

Cystitis is a frequent complication, and it is well known that it does not rarely occur during a case of blennorrhagia, and especially when this disease takes on a chronic form; but its connection with blennorrhœa has not been so decidedly marked. It sometimes happens, however, that the inflammation which accompanies urethral granulations, extends, by continuity, to the mucous membrane of the bladder. Many times you have seen patients, treated for granulations, attacked with cystitis. There are more than one case of cystitis that I could mention to you, which has been treated, after longer or shorter intervals, in various methods, without good effect, until the endoscope enabled us to see granulations in the bulbous or prostatic portion of the urethra. Often it occurs that the cystitis does not continue after the granulations have been removed, but in such cases the disease should not have continued very long, for the vesical inflammation would be too deep seated to cure itself. Many of the so-called vesical catarrhs are owing to the same cause, and are only called so because the blennorrhœa producing them has been overlooked. The herpetic and arthritic diseases may also give rise to cystitis, such as we have spoken of, and which reappear from time to time; a careful study of the circumstances attending their development may afford us presumptive evidence of their character, but a very correct diagnosis can only be made by means of what the endoscope will show.

I have mentioned to you a case of arthritis of the knee, the cause of which was veiled in doubt; this is not often the case; the existence of arthritis, when blennorrhagia takes on a chronic

form is well known; granular urethritis, once well set up, may produce arthritis, the cause of which will be difficult to discover unless the discharge, not always easy to be found, is suspected.

There is another affection, intimately connected with urethral granulations, I mean conjunctival granulations, or, to express it better, these two diseases are only one, attacking, at the same time, different organs. We have seen that the characters of the lesions are the same, and frequently, when showing to ophthalmologists the disease, by aid of the endoscope, they have recognized it as similar to the disease they were accustomed to study and treat on the eyelids. There are at present, in Ward St. Peter, several cases of granular ophthalmia, so that you can see for yourselves that the appearance of the conjunctiva, thus affected, is precisely similar to the urethral surface, subject to blennorrhœa. Appearance, however, is not all that identifies them; these two different maladies will each produce the other. It is a well-known fact, that the blennorrhagic urethral discharge will produce a blennorrhagic ophthalmia; this ophthalmia, if prolonged, becomes granular, as in the urethra. I have several times been enabled to observe this.

Amongst others, was a woman, treated in the special dispensary, for blennorrhagic ophthalmia. The treatment applied at each consultation, but remitted in the interval, certainly much relieved the disease without curing it, and it commenced to take on a more chronic condition, when she was admitted into my wards at the Cochin hospital, with double pannus and corneal ulceration. A continued and energetic treatment brought about a cure, but conjunctival granulations were observable.

The contagion is not confined to the acute stage, it can take place during its chronicity, as Professor Thiregtias amply and ably demonstrated. He has reported cases of conjunctival ulceration, produced by accidental inoculation from urethral granular inflammation, and he has also produced granulations in the uterine neck and in the urethra by thus inoculating the secretion from the conjunctiva. I have already drawn your attention to the identity of these two affections; the same is true

with reference to their symptoms. In the case of each, there is much pain, and considerable discharge of the same appearance in the acute stage; in the chronic stage, the pains are absent, the secretion scarcely observable, unless some accidental cause occurs to increase the affection. Thus the disease may often pass unperceived until its grave effects are made evident.

The affections most frequently complicating blennorrhagia are orchitis or epididymitis. Since my attention has been called to this subject, and I have been enabled to closely investigate the characteristics of blennorrhœa, I have not seen a single case of epididymitis connected with urethral discharge, unless such discharge was connected with bulbous, membranous, or prostatic granulous inflammation. Under the effect of catheterisms, the testicle often becomes painful and inflamed, but this inflammation is generally slight, and when it does become severe is generally caused by irritation due to the passage of sounds. Epididymitis, does not come on until the blennorrhagia takes up its chronic character. You have studied it in this phase, and it is needless for me to speak to you more about it, but let us look for a moment to the course of granular urethritis in its full chronic state. It may present its acute or chronic symptoms so far as granulations are concerned. The first subject of urethral granulation which fell under my observation, complained only of epididymitis, the blennorrhœal cause was so ancient that it dated back eleven years.

In such cases, where the specific symptoms are not readily perceived, it not rarely occurs that orchitis is attributed to mechanical irritation or to epidemic influence, most frequently, however, the epididymitis, of blennorrhagic origin, is as chronic as its cause. It may continue for an indefinite time, apparently relieved, again to appear, taking on a sub-acute character and simulating tubercle of the testicle. Often have I seen such an error committed, and that too by distinguished surgeons, and without the aid of the endoscope it may occur to all and at any time.

A person affected with clap, so slight as not to be perceived,

may be taken, without apparent cause, with scrotal pain, the epididymis becomes swollen, effusions often form in the vaginal tunic, and the skin becomes red; but instead of increasing, all of these symptoms soon decrease; however, pain of slight degree continues for some days, and the tumefaction may remain for two, three, or even more weeks. At length the inflammation disappears, but the testicle long remains tender, and the swelling leaves behind an induration, not so well determined as in inflammatory epididymitis. We may conceive that the cure is perfected, but it is only temporary; it may continue for a greater or less length of time, be it weeks or years, but suddenly the disease reappears, follows the same phases, and, in again disappearing, leaves a fresh inodulation, the seat of which is not so well defined as in the acute affection. The result is, that after several relapses, the testicle takes on a condition peculiar and not easily described (*englobé dans une masse bossilée*), or in other words, it becomes more or less a tuberculous or nodular mass, bound together, hard, often insensible, then painful, and then increasing in size.

When the disease commences, it is more or less similar to a case of tubercular orchitis; later on, it is difficult to tell if or not it is a case of tuberculous testicle. The only circumstance that can be used as a diagnostic remedy for this error, is the fact that tubercles rarely last so long without becoming softened and ulcerated. But it is not rare that these symptoms are so simple, they sometimes become more serious, the inflammation may become phlegmonous, in them there is formed a swelling of red appearance, shortly becoming fluctuant, which opens spontaneously or is opened by art, pus escapes, the inflammation subsides, the pus becomes serous, and the opening, for weeks, remains fistulous. I have seen many such cases. Years ago, such cases were pronounced tuberculous, and only after long study have I been able to correct an error into which I had fallen. It must be conceded that the symptoms in these cases are more or less deceptive. Let me call your attention, however, to the nature of the pus, as bearing upon correct diagnosis; cicatrization is slower than in softened tubercles;

and, lastly, after cure of blennorrhagic orchitis we do not find these hard cords which enable us to trace tubercular fistulas, even long after they are cured. This, however, does not furnish sufficient ground upon which to base a diagnosis. The watery discharge from the urethra, be it ever so little, might be relied upon, but, unfortunately, when tubercle takes hold of the testicle, it often, at the same time, attacks the prostate, and this causes a discharge similar to that in simple granular urethritis.

Now, the endoscope comes into play and clears up the question, brings light out of darkness; there can be no doubt as to presumptive signs, when we are able to see the granular erosions in the urethra. In such cases, with a sure diagnosis, the treatment is readily fixed upon—combat the testicular engorgement, and attack the disease in the canal. In every case that I have seen, the epididymitis ceased upon the cure of the urethral granulations.

We will now resume the history of blennorrhœa. The endoscope furnishes us the means of recognizing the characteristic local lesion, and by its aid we are enabled to separate it from affections simulating it in their exterior symptoms, not very defined. Once the disease well defined and disembarrassed from all that obscures its history, we are enabled to decide upon its march, its termination, and its peculiar complications, and also to distinguish between it and such affections as may simulate it. Now we will pass on to the study of its etiology.

The different authors assign many causes for blennorrhœa and blennorrhagia, about the same thing. First, comes contagion, or intercourse with an affected person, excessive intercourse with a well person, onanism, traumatic irritation, catheterism, irritating injections, any and all female discharges, chancreous pus, irritating or relaxing food, and especially asparagus, which I think most innocent, drinks, such as beer and tea, and some such medicines as cantharides. You may add to these the internal causes, such as the development of the teeth, worms, darts affections, certain different temperaments, the different seasons, and variations of temperature.

We might say that the causes of blennorrhagia are as multiple as general pathology reports in its chapter on etiology, and we may well be astonished that every one is not affected with it, or, at least, that it is not more frequent than coryza, which recognizes but one cause. If we properly appreciate these causes, and apply to them the knowledge we possess, we will perceive that some have only an imaginary influence, and others, though capable of producing a urethral discharge, do not give rise to specific blennorrhagia, either acute or chronic. This can only be brought about by contagion, by direct contact with the fluid secreted by a similar nature.

I have shown you how I became acquainted with urethral granulations, the characteristic anatomical lesion of blennorrhagia or its synonym, granular urethritis. I have been able, often, to recognize the presence of granulations in the urethra and in the uterine neck, in cases of persons cohabiting together, and reason has taught me that in such cases they were contagious, even when I was first acquainted with the work of M. Thiry, of which I have spoken. This learned surgeon, who had in view, especially, diseases of the eye, recognized the contagious character of conjunctival granulations. M. Wecker, and other ophthalmologists, admit this contagion, but as one of the numerous causes of trachoma, whilst M. Thiry considers it as the only cause, and he has seen it carried not only from one eye to another, but also transferred from the genitals to the eyes. Accidents have shown to him that this disease of the conjunctiva is produced by the inoculation of the muco-pus furnished by the urethra, or uterine granulations. By way of experiment, he has transposed the muco-pus from the eye to the urethra and also to the uterine neck, and the result has been the appearance, in each case, of similar erosions. I do not think he was supplied with means to examine the interior of the canal, and, consequently, could only infer the existence of a disease identical in its nature, producing granulations in different organs susceptible of attack, and proved that these granulations were the result of a contagion whose agent was the granular virus (*virus granuleux*).

M. Thiry's ideas and mine are alike, only his ideas are based upon a more general and direct experience. Mine are founded upon clinical observation, aided by the endoscope.

My first observations demonstrated to me granulations caused (*remontant*) by blennorrhagia. I also found this affection the basis of all granular urethritis, and when I followed it by the aid of the endoscope, as you can also do, I saw the development of the granulations at a certain period of the disease. Often, at the Lourcine Hospital, in patients affected with blennorrhagia, granulations of the uterine neck have visibly formed. You may have often observed this, and I have already called your attention to the fact that non-specific affections of the neck do not give rise to it. Hence, the natural indication is, that blennorrhagia, blennorrhœa, and granular urethritis are the same disease. This disease is transmitted by a virus, a virus which is the active hypothetical principle of the contagious pus; it might be called granular virus, but as we generally distinguish the virus by the produced disease, and not by the anatomical lesions, I prefer the term blennorrhagic virus (*virus blennorrhagic*).

In its acute stage, the contagion is by no means doubtful; but such is not the case in the chronic state. Unfortunately, blennorrhagia is not generally regarded as contagious, and hence it results that the evil, wherever its seat may be, in the conjunctiva, the urethra, or the uterine neck, propagates itself, unless the necessary precautions are used. This contagion is certain, and especially in acute blennorrhagia. M. Thiry has demonstrated that, be the secretion of conjunctival granulations as feeble as possible, it is inoculable as soon as enough of it can be collected; and, with my experience, I can state that the chronic form of the granular affection is transmissible from one sex to the other. From man to woman, I have so often seen uterine granulations appear, as a consequence of granular urethritis, that no doubt can exist, in my mind, on the subject; from the woman to the man, many times, I have seen patients affected with blennorrhagic discharge, contracted from women who were not exposed, and who were only subject to a slight

leucorrhœa, and in whom I have been able to find, by aid of the speculum, evident marks of granular metritis. So the granular affection, in its chronic state, is inoculable, and though such is frequently the fact, it would occur much more often if the secretion was not so much attenuated as sometimes to be incapable of reproduction. You can readily imagine that after the canal is well washed by the flow of urine, it may require several hours for the discharge to become so virulent as to be able to reproduce the disease, in other words, to become inoculable.

The chronic affection often transmits its chronic virus; but it sometimes gives rise to acute blennorrhagia, most frequently, however, from various causes, or from the excitation accompanying the act of infection, the disease takes on its acute character and thus transmits it to healthy persons. The return of the affection from chronic to acute is not a necessary result, for we often see blennorrhœa producing blennorrhagia. I have seen several examples of it, but will only mention the following, because the circumstances caused me to doubt the possibility of transmission:—

T., aged twenty-eight, an employé, after several badly treated blennorrhagias, was subject to a slight continuous gleet, accompanied by a tickling sensation in the urethra. These symptoms always increased after connection. Having gone through several different courses of treatment, he took, for two days, Chopart's lotion, and then entered the hospital with an orchitis. Of the testicular affection he was soon cured, and left with the blennorrhœa still on him. Some months after, persuaded that the discharge, scarcely visible, could not be contagious, he married. Shortly after, I was called to see the bride, a woman of irreproachable character, and I at once saw she had one of the most violent cases of blennorrhagia I had ever seen. The vulva, the vagina, and the uterine neck were all attacked, and in every point accessible to sight, there were the superficial erosions characteristic of lost epithelium, the loss caused by blennorrhagic inflammation. The diagnosis was very evident. After a few days, granulations commenced to appear on the

uterine neck. When I saw the husband, he was only affected with a blennorrhœa, for which he had previously consulted me. He assured me his disease had never been followed by acute sequences, which, moreover, could not have disappeared in that time; by an endoscopic examination, I found extensive granulations in the bulbous portion of the urethra. Thus, we see that a blennorrhœa, without retaining its acute character, has caused a true blennorrhagia, or, if you prefer the expression, a chronic granular urethritis, the contagion of which produced upon the woman the acute granular affection.

If we take a retrospect of what we have said upon the etiology of blennorrhœa, we must conclude that it is always the result of contagion, whether it commences in its acute or chronic form, or if the virus is blennorrhœic or blennorrhagic. If other causes than contagion have been assigned, it is that different affections have been confounded, but the endoscope always shows the characteristic granulations. We have already seen that, in these cases, the discharge is often kept up by an herpetic or arthritic cause. But, perhaps, the error is more frequently caused by the fact that the patient was the subject of granulations which might be called latent, and which excitement might bring into the acute stage; and thus may be naturally explained those cases quoted of true blennorrhagia contracted by intercourse with a healthy person. In addition, I have often seen persons believing themselves cured of an old affection, who dated their present attack to only a few days back, but the endoscope has shown, in such cases, granulations of a date evidently anterior.

There is, however, a block here, gentlemen; some of you may tell me that you have observed granular metritis in cases where blennorrhagic influence could not be suspected. How do you know this? Your patients were above suspicion. Are you very sure that their husbands had not preserved an old discharge, of slight sweating character, the result of former affection, forgotten and difficult to discover? Have you examined them? Are you sure there were no granulations in the deep-seated portions of the urethra? For my part, I am sure that

your patients are affected with grānulations, and I am equally certain they have been contracted by contagion.

But call to mind, if you please, what I told you in my last lecture, and see if you have not mistaken for these granulations others of a fleshy kind, caused by a very natural, but very different species of complaint, the appearance of which may be changed by accident, or may you have been deceived by an optical delusion, such as I have advised you of, and of which I was long the victim, and which makes us mistake the granular concave depressions of an herpetic eruption for hemispheric enlargements. At present, I will drop this subject, as it will necessarily come up again when we take up the uterus; only I will call upon the testimony of my own students to testify that they have rarely seen granular metritis since they have been able to recognize herpetic ulcerations on the uterine neck.

Before stating a treatment for a disease, it is necessary to have it defined, to eliminate all that can simulate it, because, no matter what name it takes on, in these affections of different natures, it is easy to understand that what is well in one case is bad in another; we mean that, generally, therapeutics become more simple as the disease, better studied, disconnects itself from all that might be confounded with it. When I was a student of medicine, one of our professors said that, "the more remedies proposed to cure any one disease, it was sure that none good had been found;" and this just reflection is appropriate to such a disease as the blennorrhœa of the authors, in which they have united many different affections having only one common symptom and one common seat. If you are of the opinion of this professor, you must believe that there is no good remedy against blennorrhœa. I will not mention here all the various articles used in injections, nor the different formulas of cubebæ, copaiva, or turpentine, doubtless very good when the disease has lost its violence, but which I have never seen cure, the granulations once established. These authorities have been imposed upon by the fact that the remedies used temporarily checked the discharge, and thus thought it to be cured; but for my part, I have always seen it recur upon the cessation of

the treatment. Question your patients, and you will learn that most of them have uselessly employed such means during months, and sometimes years. The inability of ordinary treatment led to irritating injections, called caustic, in hopes of producing a new inflammation to supersede the original chronic one, and thus to bring about a cure. This mode has been pronounced successful, I have never seen it so; and, often, patients tell us that after cruel suffering, when the artificial inflammation ceased, the blennorrhœa reappeared with increased vigor. It is easy to account for this want of success; in fact, the injections are too weak to modify the granular surface, and too painful for the patient to submit to them as often and as continuously as may be necessary, for it must be borne in mind that granulations yield only after a long time. The inability of these rational means has caused the admission of others, the constant failure of which has alone been able to preserve. It has been stated that a new blennorrhagia in its acute form will overpower an old one, and that both will cure together. It is difficult to understand such an idea; for my part, the result of my observation shows that the patient who grafts a blennorrhagia upon an old blennorrhœa is very fortunate if, the blennorrhagia passed, he does not find himself worse off than before. It has also been stated that, once the disease has reached its entire chronic state, it may be cured by cohabitation; some authors add, that all contagion has disappeared. The discharge is always contagious, as much so as is granular ophthalmia; and, besides, occasion is not wanting to the result of this practice, so pleasing to the patient. Never have I seen a cure by such advice, but, on the contrary, a few days will show the disease to be aggravated and prolonged. Thus we say, by force, that urethral granulations are not subject to ordinary therapeutics as a means of cure. This compels us to agree with Chomel, who said of uterine granulations, "they will not yield except to certain topical remedies, and especially to cauterization." Once knowing the lesion which keeps up blennorrhœa, it should be easy to treat it. It is the same that applies to other granular affections, such as are successful in

granular metritis or conjunctivitis, in other words, cauterization.

How should this cauterization be practiced? To this end, strong injections have been employed, even of nitrate of silver passed into the canal in its fused state. We have already spoken of injections; they are too feeble to act efficiently, and too painful to be continued, and, if made more strong, they would increase rather than diminish the disease, by attacking healthy parts. So far as the *porte caustic* goes, it blindly attacks all parts, those well and those affected, and this the surgeon cannot foresee; even the granulations, if it should reach them, are but slightly affected, too strong at one place and nothing at another. I must add, that I do not believe that any surgeon is sufficiently courageous, or any subject sufficiently patient to submit to such treatment, as long as might be necessary for a cure.

What we cannot find out by ordinary means, the endoscope will afford us surely and easily. The instrument, made to bear upon the diseased parts, permits us to judge of the portion attacked and to cauterize it; it is enough to reach the diseased parts and then to apply the caustic direct, thus preventing its contact with others not affected. I prefer, as a caustic, the nitrate of silver, one which I have often used in like diseases of the womb, after having tried many others. The liquid caustic has the advantage of reaching the anfractuosités, of acting upon all without touching any too much. I have tried the solid stick, applied through the sound of the endoscope, but it burned too deeply, and caused eschars upon the points touched, whilst others were not affected in this way. So it has the inconvenience of acting incompletely, and of causing loss of substance, and of thus causing the patient to become a victim of almost certain stricture. All of these I have abandoned, and now use the azotate of silver in solution, say from one-third to equal portions. (R_y. Azot. arg. chrys. 5 or 15 grammes to 15 grammes of water.) This solution never produces eschars, it is rather cathartic than caustic, and, if I do use the word caustic in speaking of its employment, it is only that none other, more appropriate, has yet been adopted.

The application is very simple:—When the lesion to be attacked has been discovered at the end of the sound, clean it well with dry cotton wool, carried in on a probe more or less long, then, in like manner, cotton saturated with the solution may be applied directly to the parts and left in contact with them for some moments before being withdrawn. This operation should be employed whenever granulations are found. The points touched immediately become whiter and the granulations more apparent. One fact, well worthy of mention, is, that the patients experience but slight pain; frequently they only complain of slight heat in the touched part. M. Wecker also makes the same remark in reference to the cauterization of the conjunctiva. After each cauterization the emission of urine is painful, but this pain, always bearable, though sometimes severe, diminishes with each discharge, and most frequently disappears on the following day. Cold lotions, applied externally, tend much to calm it. It is, moreover, necessary to bear in mind that a certain degree of inflammation is necessary for the destruction of the granulations. At the commencement of the treatment, the cauterizations should be repeated every three or four days; later, when the granulations have disappeared and only a roughened surface, caused by erosion, once a week will be often enough to apply them. If the ulceration is covered with fleshy granulations, especially if they are fungous and easily bleed, they should be touched with a strong solution; in such cases, equal parts of nitrate of silver and distilled water become necessary.

As a consequence of this cauterization, I have but rarely met with a slight febrile attack, or a commencing orchitis. A little sulphate of quinine will meet all the exigencies of the first, without interrupting the treatment; for the second, I have never been called upon to suspend the cauterizations for any length of time.

Repeated cauterization is undoubtedly the most essential part of the treatment, without which a cure cannot be obtained, still it is well to join to it other adjuvants, which are not wanting in efficacy and utility. In uterine and conjunctival granu-

lations, injections and collyria are useful aids; so injections into the urethra should be added to the cauterization, though the frequent washing of the canal by the urinal discharge renders it less necessary in the urethra than in the vagina. I have tried many injections and have concluded the almost exclusive adoption of the decoction of roses of Provins (a French town) the best. Though of slight astringency, this injection seems to be capable of producing as much effect as more powerful astringents, and it has, besides, calming qualities which diminish the pain of the treatment. It may be said, in addition, that, if some of it should reach the bladder, no harm will result, and, after what we have said as to the seat of the granulations, it is evident that an injection limited only to the anterior portion of the urethra is simply useless. When the granulations have disappeared and a kind of watery discharge alone continues, stronger astringent injections may be advantageously used. In such cases, I employ sulphate of zinc, acetate of lead, alum, krameria, and tannin, in one word, all the substances employed in like cases, but of a weak strength. Baths, also, are useful. I generally recommend one to be taken after each operation. They bring back the local and general calmness, disturbed by cauterization, and most especially in nervous patients.

Generally, I do not advise any interior treatment. I have tried diuretics and alkalines, for the purpose of acting upon the local affection through but without avail, unless the liquid (urine) is so charged with salts as to be unusually irritating. In such cases, mineral water, of an alkaline character, to my thinking, is the best.

As for diet, such as is generally used is the best, and, if necessary, tonic, in weak or lymphatic cases; liquor, wine, and strong coffee are to be avoided. These excitants are always injurious. I have often seen the case set back by improper indulgence.

But this is not all, sexual intercourse *must* be forbidden, not only a little, but any. A single infraction of this law will often materially interfere with the cure, and loses all the good done by previous treatment. I have often seen that when the patients

were not continent, simply by the inspection of an ulceration, previously in the way of rapid cure, thrown back, very red, and bleeding at the slightest touch. I have also seen patients keep up the disease for a long time, and render all treatment inert, until they have consented to be utterly abstinent in all sexual relations. Thus, you will see how I differ from those who recommend this as a curative means.

This treatment, well and thoroughly carried out, all of your cases will be cured. Up to the present, I have yet to see the first resisting case, when it has been sufficiently continuous; but you must bear in mind that the cure requires a long time, so inform your patients and demand their aid. The granular affection does not change its character in changing its seat, and in the urethra, as in the conjunctiva, or in the uterus, a cure must not be expected in less than two or three years. (*Sic*.—Is it not months? TRANS.)

To fix the period for the cessation of the treatment, is a delicate matter; as long as the sound is introduced, or nitrate of silver is applied, so long the discharge will not cease, injections even will keep it up to a certain extent. The only guide is the appearance of the ulceration. When the mucous membrane has retaken its naturally smooth and polished appearance, though still slightly red, when the nitrate only pales without much whitening its surface, all cauterizations may be stopped. Then I continue, for a short period, injections, soon to quit them, for the purpose of keeping up only the hygienic treatment before spoken of, and that as long as possible. The discharge soon ceases of itself.

Up to the present time, we have only studied discharges due to granular affections. I do not, however, wish to stop without a few words on the treatment of herpetic and arthritic affections. I have already shown you how the endoscope exposes true blennorrhagia; you will naturally recollect that, without the aid of this instrument, the distinction between the different discharges is impossible, and you can only reach them by presumption.

The diagnosis in such cases is still more difficult and impor-

tant, from the fact that the herpetic affection often follows granular urethritis. We often see herpetic plates developed upon the vulva, the vagina, the glans penis, and the prepuce as a consequence of vaginal blennorrhagia and balanoposthitis, or of the irritation kept up in those parts by chancre. The relation existing between these diseases is, one acts as the cause of the consequence, and causes the second; it does not less certainly follow that a discharge continues and distresses the patient, who cannot tell the difference which has taken place in his condition; moreover, the herpetic discharge is one to be rid of. In this discharge, the treatment should not be the same as in granular urethritis. In one, the general treatment is secondary in effect; in the herpetic, it is primary. It is necessary to attack the darts element at once, and by the most appropriate remedies; alkaline baths, depuratives, alkaline mineral waters, Fowler's solution, etc. I do not propose to insist upon the same treatment that may be found necessary in herpetic and arthritic affections located differently. As a local application, the nitrate of silver does not do well in these cases; frequently I have seen it increase rather than diminish the disease. So I have quit its use and now employ the oil of juniper, (*cade*), applied to the herpetic plates, the effect of which seems to be favorable. As for injections, astringents seem to answer well; but the best are composed of oil of cade and oil of almonds, compounded in the proportion of one-fifth or one-tenth of the oil of cade, otherwise, employ mild alkaline injections; sulphurous injections are also beneficial. Heat, completely inert in granular urethritis, is very useful in this form of the disease.

I must press upon your attention here, the fact that blennorrhœa is an important element in many severe affections of the urethra, and also because the endoscope furnishes means of distinguishing granular urethritis from other discharges.

In some patients, of a soft and lymphatic temperament, the mucous membrane of the urethra and of the vagina becomes the seat of hypersecretion, which may often simulate blennorrhagia.

The endoscope will aid us to a correct diagnosis. Astringent injections will stop the discharge in such cases, but it will re-

appear on the cessation of the treatment. The only rational treatment is the use of general and generous tonics, and, when possible, sea-bathing, stimulating mineral waters, reconstituents, sulphurous, iodic, or saline; the choice of these must depend upon the temperament of the patient.

I have treated long upon this disease, blennorrhœa, because of its important bearing upon many urethral diseases, and because the endoscope will enable us to study it by a new light, showing us the granulations giving rise to the discharge, and enabling us to apply directly the proper remedy. We must now study the strictures it produces, when not arrested sufficiently early. In my next lecture, I will take up that subject and demonstrate to you the use of the endoscope in the premises, as to exploring and treating confirmed strictures.

Up to the present time we have been entirely occupied with the consideration of granular urethritis, and no mention has been made of strictures as a consequence. I have kept back their history, so as to present it all at once, and draw the line of demarcation between those and others of a traumatic character, lesions, different in their origin but like in their consequences, symptoms, and indications of treatment.

If, in investigating blennorrhagia, and the consequent strictures, as a single affection, commencing at the time of contagion, you will necessarily be led to the conclusion that there are three different grades in the march of the disease, each of which tend to stricture.

The first stage is blennorrhagia, or *acute inflammatory stricture*. The last makes a fibrous, inodular, organic stricture.

Intermediate, between these, a condition occurs, which prepares the transition from the first to the third. As Alph. Robert said, in his report to the Medical Academy, in 1852:—“*Between the acute primitive inflammation, characterized by redness and swelling of the membrane of the urethra, and the consecutive stricture, characterized by a fibrous cicatrix, there is a period transitory, which is neither inflammatory or that of properly so-called stricture.*”

This period, indicated by Alph. Robert, can only be recog-

nized by sight; to do so, the endoscope is essentially necessary. It has taught us the existence of a granular urethritis, which could only be taught by an instrument like the endoscope. Let us rapidly run over the three different species of stricture, one following the other, and all preceding the inodular.

During the acute period of blennorrhagia, the swelling of the mucous and subjacent textures form a decided temporary stricture, and the flow of the liquid is so painful that it causes a spasm, adding to the difficulties of emission. Thence, a complete retention occurs. It may happen that the passage of the urine becomes impossible, and the interruption become complete; we call this *acute inflammatory stricture*. Except in such cases, rare, which demand a decided and especial treatment, catheterism was all that was necessary.

It so happens, however, without going back to granular urethritis that blennorrhagia gives rise to permanent stricture. In these cases, the inflammation in some points becomes intense, and is readily observed externally by its painful nodosities. The tissues are too profoundly changed to again take on their natural formation; sometimes the urethra becomes inextensible and forms what is often called a chordee, the cord breaks, and the urethra is torn. In each case, strictures form, which become inodular; these strictures occur early; they are more or less spasmodic in character; sometimes persistent and then, again, retractile; they are organized under the influence of much irritation, and the inodular tissue retracts in the irritated parts as in a burn. At this period, so far as the endoscope shows us, the urethritis has not reached the bulb, but is confined to the spongy portion of the urethra. This, I think, will fully explain the remarks of many surgeons, who have stated that stricture of the spongy part of the urethra was more difficult to dilate, and more liable to be torn than in other parts of the canal. In other respects, all strictures are of an inodular character.

Granular urethritis once set up, we have seen how it continues the swelling of the urethral walls, and the inflammatory retraction of their fibrous elements; the resulting stricture may well be called *chronic inflammatory stricture*.

The disease may long remain in this condition; the granular ulceration may exist at the same time that there is decided stricture, as I have told you, and as you have opportunities of seeing for yourselves. So long as the endoscope shows the characteristic ulceration, we are apt to hope, in causing it to disappear, that the disease is cured. But it sometimes happens, that the consecutive lesions, already well rooted, continue after the cause has disappeared, and strictures, often, are only curable by dilatation. Thus, the affection consists in two elements: stricture, to be overcome by mechanical means; and ulceration, perceivable by means of the endoscope, which, if cured by proper means, will soon bring on, or reproduce, the retraction.

This may explain one fact, often observed, and of which I vainly sought an explanation, until the endoscope enabled me to follow the disease in all its phases.

I have seen recent strictures, not extensive, easily dilated. After a few days they disappeared, but, the treatment stopped, they soon reappeared, and as often as they were dilated, so often did they recur, upon the cessation of the dilatation. Uselessly, have I continued this treatment; I have kept a healthy calibre for months, but, once the dilatation stopped, the stricture would return. I have concluded that new strictures are more apt to recur than those of more ancient date; the cause of this I cannot explain. I held this opinion, in common with many others, equally ignorant as to the cause. At present, the explanation is easy, as you have already seen. The ulceration, which continues, reproduces the swelling. Its persistence, formed upon a plate of chronic eczema, may, by dilation, be soon removed, to come back, so long as the eczema is not cured.

When the thickened parts disappear simultaneously with the discharge, the cure is complete. You recollect the case of D., cured by a single cauterization, and remaining cured for eight years. Many other cases, similar, are present in my memory, and you will see them at each consultation. For a long time, the stricture was not attacked directly; the only treatment was applied to the granulations. When the alteration of the tissues

continues so long as to persist independently of the producing cause, such is not the case, and dilatation should be added to other treatment. In such cases, relapse is frequent; exceptions to this rule are rare, I know of but few. If the patients did not, as a general rule, disappear after treatment, such cases would be less rare.

We now reach the third period of the disease: the granulations disappear, as do those of the conjunctiva, when they have destroyed the structure of that membrane. Possibly, the obliteration of the vessels may play a great part in the ease. But as the granular affection passes off, the stricture keeps up its onward march upon the retraction of the fibrous tissues extending to the mucous, the mechanism of which M. Guérin has well shown, the mucous and sub-mucous tissues take on a character cicatricial in its results. Before informing you as to the results of the endoscopic examination, I will relate to you the details of an autopsy which enabled me to study the disposition of this inodular tissue. The stricture never having been treated, the alterations found were evidently the result of the affection itself.

The patient entered my wards, in the Necker Hospital, with an affection of the foot, necessitating the amputation of a toe. During his sickness he told me that he had had a blennorrhagia which had never been treated, and the result of which was difficulty in emitting the urine. After curing the foot I found a stricture.

The patient died of purulent infection, and the autopsy showed metastatic abscess in the lungs, and also the following lesions in the urethra:—

The portion of the canal strictured is generally the bulbous, and the extent of the stricture is about half an inch in length (2 centimètres). In this portion, the color is of a whitish or slightly yellowish color, whilst the remainder of the urethra is very red, rough, and of the appearance generally seen in corpses. The diseased mucous is attached to the subjacent membrane, from which it is not easily detached, the layers of which are thicker than natural. Below the cavernous part,

the bulb presents a healthy and natural appearance. Microscopically examined, the mucous membrane shows an epithelial layer, formed by cells more irregular than the rest of the urethra. Below this epithelium, the mucous tissue affords fibres similar to those in a healthy state, but mixed with abundant elastic fibres, many cytoblasts, and granulations such as we find in the primary organization. The sub-mucous tissue is especially formed of bundles of fibres, in the intervals of which the cytoblasts and granulations are very abundant, many more than in the mucous; there are also many elastic fibres and fibro-cellular cells in different stages of granulation.

This confirms the general opinion as to the inodular character of stricture of long standing, where caustic had not been used; no traumatic cause was present, and yet the elements of cicatrization and the fibro-elastic element were both more abundant than in the normal state.

The identity existing between this formation and that of the cytoplasmic tissue, readily explains how strictures of long standing, and organized, may rebel at dilatation, be retractile, and present the same appearance of elasticity as do cicatrices. Really, the structure is the same, and, paradoxical as it may seem, the stricture is, at its last period, less a disease than the effects of anterior treatment for a disease; so the inodular filaments, no matter the trouble caused, are only the result of a wound.

Similarly endowed inodular strictures resist dilatation, only obtainable by much time and much fatigue to the patient. This is not, however, the greatest inconvenience. The urethra once brought back to its original size, once the treatment stopped, the retraction reappears and the stricture returns. In severe cases, a few days may produce that which weeks or months will not replace. There is no reason to hope, in such cases, for a durable cure, by prolonging the use of dilating instruments, for in such cases, as in the sequences of burns, the cicatrices object to extension. In extreme cases, the patients may not be cured, but a bougie may be passed now and then. They must be placed upon a continuous treatment, not to be inter-

rupted without being forced to recommence the dilatation. A similar case is scarcely bearable, in addition, once the malady has taken its course, urethral inflammation, or vesical, urethral fever, or other accidents will aggravate it and render it more difficult to treat.

These are the reasons causing us to admit the principle of incision in the third degree of stricture. It is well known that the resulting cicatrix is thinner than cut tissue, it does not reproduce the stricture, and enables the patient to introduce the bougie at long intervals.

From what we have said, it results that there are three different kinds of stricture, to be met by different treatments. In the acute inflammatory, cure the blennorrhagia; in the chronic inflammatory, it must be, for a long time, against granulation, but later, dilatation comes into play; in the inodular, it is necessary to attack the fibroid tissue and, consequently, fall upon an appropriate treatment.

These indications admitted, the endoscope enables us to see, at once, the character of the stricture.

FOURTH LECTURE.

Inodular Stricture.—Urethral Fistulas.

GENTLEMEN:—Before touching upon the treatment of inodular stricture, it is necessary to acquaint you with the means of exploration which can furnish the indications for the therapeutics demanded in their treatment.

The means of exploration usually employed, furnish a certain number of useful signs, both for diagnosis and for treatment. We must expect the same from the endoscope; it does not double other means, as I have already told you, it only adds to their efficiency, in enabling us to complete the study of the disease. Other instruments furnish all the knowledge that is attainable by mediate touch (*toucher*), the endoscope adds to them that knowledge derivable from sight.

The sound, ordinarily, reveals the existence of a stricture and its seat; even if it passes one stricture, it can tell us if there are others beyond it. Simple bougies, bougies with bullet

ends, and other similar and analogous instruments, may acquaint us with the degree of retraction of the strictured point. The ball-pointed instruments enable us, moreover, to determine the number and extent of the strictures.

The bougie and the curved stylet will also, sometimes, enable us to judge upon which side of the coarctation the opening may be found, this by the direction it may be necessary to give the instrument for the purpose of meeting it. Also, the consistency of the fibroid tissue may be appreciated by the more or less difficulty experienced in passing a conical bougie, the point of which has entered into the channel still left in the stricture; its elasticity, by the resistance experienced on endeavoring to re-introduce it, after having once withdrawn it; its retractility, by the rapidity with which it loses its acquired diameter, when dilatation has been suspended.

Such are about the opinions drawn from the means generally employed. It is, I think, useless to add to them the results of explorations made with bougies for impression (*à empreintes*). It is useless to repeat here, all that has been said of the fallacies they are guilty of; the little use made of them at present is sufficient evidence of their uselessness.

To resume, the different means employed by the surgery of the present time enable us to appreciate:—1st, the existence and seat of the stricture; 2d, their number; 3d, their extent; 4th, their calibre; 5th, their elasticity; 6th, their retractility; 7th, their consistency.

To these, the endoscope enables us to add coloration and the configuration of the surface anterior to the coarctation, and, also, the exact position of the orifice. It also affords us the means to decide at once if it is inodular, and also to positively say what should be the treatment.

We have seen that at the intermediary stage, the mucous membrane loses its red color; and also its ulcerous appearance, at the same time the stricture is being organized; it can also retake its normal appearance.

This condition, which has terminated with the second period, changes at the commencement of the third. With length of

time, the infiltrated lymph continues to organize; the tissues increase their inodular appearance, and, when examined by the endoscope, instead of the rosy color of the healthy urethral mucous, or of the red color presented at the commencement of this stage, when irritated by the introduction of instruments, the retracted point shows a paler hue than natural, and one which becomes yellowish or greyish, often dull, sometimes mother of pearl (*nacre*), and simulating the cicatrices that are the sequences of burns, and such as the pathological anatomy of stricture enables us to describe.

The configurations presented at the end of the endoscope by inodular stricture, vary much, as do all other pathological cases in the case of dispartitees, still we can form them into almost three principal classes.

Some commence funnel-shaped, in which the most retracted point is at the lower extremity of the coarctation. Unfortunately, this is rare in hard or in ancient strictures, because it facilitates the introduction of the instrument. Another form, already recognized in the preceding stage, and often occurring in this, is the mamellonated. In this we find, at the end of the sound, mamelons formed of indurated tissue, readily discovered by the resistance offered to the introduction of the instrument, with difficulty bent upon their surface. It may happen that the mamelon is unique, circumscribed by a groove and tongue, causing the introduction of the sound to be difficult, the opening being hard of access, generally found in the middle, and opposite the salient point of the mamelon, but sometimes to its side. Generally, the orifice is where it appears most large and most deep.

If there are several mamelons, their summits verge towards the centre, and it is towards their convergence that the opening is found. Sometimes, these mamelons are so irregularly disposed that the orifice is hidden from all researches made with the stylet. In such, the bougie is often difficult to introduce, because it does not find the funnel-shaped orifice which will direct it.

Sometimes, between the affected points, there are parts more

or less healthy and vascular, showing more or less red or inflamed tissue.

Finally, I may say, that in a last form of this disease most rebellious to catheterism, by the ordinary modes of treatment, the sound showed an obstacle like a diaphragm, the surface of which showed plates unequal, anfractuese, with many small anfractuositities and some greater ones; the eye could not discern all, and especially those which corresponded to the entrance through the stricture. To recognize it, we must examine these depressions mechanically, until we find one softened. But when the stricture is hard, the stylet does not free it readily, even after several efforts, though it may have entered the retracted canal.

There is a variety of this form which I have rarely seen, and always in old and hard strictures. In this, the orifice, be it situated in the centre or other parts found at the point of the sound, is gaping, and simulates a small rounded opening, into which one could easily introduce the end of the stylet. But, though the stylet or the whalebone bougie might be readily introduced, it is often very difficult to pass through the contraction, and especially to dilate it; in those cases the tissue is very resistant.

In addition to the color and configuration of the obstacle, the sound pushes them before it, instead of repressing, as in cases of healthy or simply inflamed mucous membrane. This sign is especially useful in those cases where the transformation, commencing in the exterior tissues, has not yet reached the mucous surface, still red or ulcerated, and thus we may think the evil less advanced than it really is. But, in such case, touch, by aid of the sound, exposes to us, under the red surface, an indurated and resisting base; it is thus evident that the inodular tissue has formed, though not yet come to the surface.

It has been stated that sudden strictures are caused traumatically, and are thus distinguished from those caused by blennorrhagia, of which the anterior portion is funnel-shaped; but the endoscope shows us that these last often come on suddenly, and the first may be gradual.

Whatever may be the appearance of the coarctation, it does not change on the withdrawal of the sound, because the tissue has not lost its suppleness and cannot pleat and close over the end of the instrument. On withdrawing the canula, the healthy parts close over its end, like a curtain, but the indurated parts remain unchanged in appearance.

You see, gentlemen, the facility and precision the endoscope brings to the diagnosis of inodular stricture. Without this instrument, we could only admit them, except in traumatic cases, by reason of the continuance of the malady, or of the difficulty of dilatation and the rapidity of the return of the stricture, but the duration furnishes only deceptive probabilities, for if strictures caused by blennorrhagia are sometimes fibrous after a few months, you may remember that in the case of D., spoken of in a former lecture, he, after a continuance of the affection for eleven years, had only a chronic inflammatory coarctation, which disappeared with the granulations; and, in another case which I have reported, the disease yielded rapidly to dilatation and a treatment of the ulceration still existing. Then there only remains, as a sign, unsuccessful dilatation, and so we can only after unsuccessful treatment and lost time recognize the lesion. By aid of the endoscope, on the contrary, we can immediately tell the differences; whenever there is found at the end of the instrument, an inflamed or ulcerated instead of a healthy membrane, a white surface, mamellonated, anfractuous, or of fibroid appearance, it is certain an inodular stricture is present, and the therapeutical indications are immediately understood.

We will now take up the treatment of the coarctations, and of the indications to be met. They consist in two principal ones:—1st. Pass through the stricture; 2d. Destroy the obstacle.

1st.—Traverse the Stricture.

This is often easily done; it is only necessary to introduce a sound or bougie, sufficiently fine to pass through the obstacle. If the opening is not readily found, the bougie is to be drawn

back and again gently readvanced, with these precautions it generally occurs that the point of the instrument will, at some moment, gain the opening, then, gently pressing it onward, it reaches the bladder. I shall delay no longer on this point, which is not exactly allied to the subject at present under consideration. Success almost always attends it, but there are cases where patience and hability, no matter how great, fail to discover the opening, the point of the bougie will butt against the surface preceedingly described, and, do what we may, it will always stop there. After continued efforts, the attempt is deferred to another day, when the insuccess is the same; even days and weeks may pass in futile attempts and in failure. Many means have been recommended for such cases: whalebone bougies, bougies very fine, introduced side by side, so as to cover the whole obstacle with points, one of which might be lucky enough to pass, the sound open at both ends (*à deux bou*) passed up to the retraction, to serve as a conductor of a fine bougie. I have tried all of these means, they sometimes succeeded, but I prefer a conical bougie, twisted at its point; but I must add that, in some of these cases, none of these treatments are successful. It is doubtless rare that, with time and patience, success does not follow; but patience has its bounds, and we will soon come to cases where it has been necessary to relinquish futile attempts at cure.

These fruitless attempts cannot be long continued without danger, and especially so when the urine does not flow at all, or only by driblets; the distended bladder threatens rupture, the patient experiences intense anxiety, the urinary infection manifests itself; or if less severe, the distension less prolonged, it may at least cause inertia or paralysis of the organ again, the superior portion of the urethra becomes fatigued, inflames, softens, urinary abscesses form, which, after many dangers, result in urinary fistulas. In such cases, not very common, temporization and continuous treatment will not answer. It is necessary to act, and to act quickly. What shall we do? Surgery has but one resource, the puncture of the bladder, because forced catheterism is properly rejected for all cases of this kind

on account of the bad effects it causes. The puncture of the bladder is made but, say what you may, experience teaches that it is not without danger. Its effects are, moreover, only temporary, they do not reach the cause, which still continues, and if the coarctation remains, the danger is from one day to another. This was the case with the patient whose history I will give you :

For several years he had a stricture, which followed the usual march, increased more or less rapidly, and finally caused complete stoppage of the urine. The patient placed himself in the hospital, under the care of one of the most able of our masters. At the time of entrance, the bladder reached as high up as the umbilicus, the danger was great, the fever violent, and pain and tumefaction had already reached the perineum.

All attempts at catheterism were fruitless, and the incision of the swollen perineum bringing off but little water, hypogastric puncture of the bladder was resorted to. This produced ease, but the stricture was not relieved; it so happened, however, that the urine passed, slightly by the urethra, and much by the punctured fistula, the puncture in the hypogastrium having healed, the patient went about his business. Soon, however, the urine ceased to pass through the canal, and the fistula becoming more contracted, the bladder could not empty itself, and so the patient entered Cochin Hospital, of which I was then the surgeon. This was in 1861, when I was experimenting with the endoscope, but had never yet used it for the purpose of passing strictures. The fistula, though not permitting sufficient urine to pass, was still sufficient to postpone danger, and for several days I tried to introduce the smallest conical bougies. In this I was neither more expert nor more fortunate than my former teacher. I then decided to try the endoscope; by its aid, I perceived the obstacle and an opening into which a stylet could be passed, then I had not thought of the whalebone bougie (this patient caused me to imagine it). I withdrew the instrument, and, after several efforts, a fine bougie (filiform) traversed the stricture, previously passed by a sound. This was much, but for a long time I was compelled to employ the endoscope as a preparation for the bougie. At length the dila-

tation went on regularly; but when bougies of a low number readily passed, the patient pressed by his vocation, and satisfied with his then condition, wished to leave the hospital.

The following year, 1862, he found me in the Necker Hospital. The same fistula existed, and the incompletely dilated stricture had returned. I had uselessly wasted time in catheterism without the endoscopic aid, but now I concluded to combine the two. I employed endoscopic urethrotomy, and the obstacle was removed in less time than we had previously spent in vain attempts. We will return to the subject of urethrotomy, but I will state that in this case, in absence of the endoscope, I would have been compelled to puncture the bladder, as had been done before, or else to an incision (*boutonnière*), that is to say, to urethrotomy without a conductor, the difficulties and dangers of which I will not now recall.

This case will enable you to appreciate the utility of the endoscope as a means of passing difficult strictures. Now for the manner of its use as I employ it:—

The endoscopic sound is passed forward to the obstacle, and, the instrument being arranged, we can perceive the condition that I have described, and, frequently, the orifice in the retracted part. In this examination, care must be taken to keep the sound in the direction leading to the affected part, so that its anterior face coincides, through its whole extent, with the end of the instrument. As the examination is almost impossible if the instrument is vertical, it is necessary to place the patient in such position that the axis of the diseased part nearly assumes the horizontal line. To act upon the membranous portion, dorsal decubitus is preferable; but for the bulb, and especially its anterior part, it is best to raise the patient to almost a sitting posture. When the diseased surface is thus brought fully before the end of the sound, the orifice is almost always in the field of the instrument, but it sometimes hides itself under the edges of the wounds; then the direction must be changed to discover it. Frequently, in like cases, I have found it towards the lower portion of the canal, and the indurations existing upon the superior portion.

The orifice once found, a stylet must be introduced, to make sure that we are right, and also for the purpose of traversing the retracted part. This is easier done with a metallic instrument than with the whalebone bougie, which is not so conveniently managed. The stylet usually employed is shaped like the ordinary probe, mounted upon an elbow-shaped handle (*manch coudé*) of the forceps character (*en form de palette*), by which it is held at the exterior of the sound; it is well to have at least two of different sizes.

The patient being then placed in the proper position, and the penis held by an assistant, who at the same time may steady the sound in the axis of the canal and firmly hold the parts, the stylet is then introduced through the lateral opening in the sound, and we try to make it enter into the orifice of the coarctation. I have already said that, if the surface of the obstacle is irregular, with several depressions, try each until one is found that the probe will enter. Sometimes, the first attempt is successful, and the instrument is only arrested on the farther side by a mucous pleat; but sometimes it stops after a short entrance, in the sinuosities of the stricture, which rarely furnishes a uniform calibre. In such cases, the stylet may be carried in different directions, and we may even move the sound so as to permit the passage of the probe. Once the obstacle passed, it can be dilated by changing the stylet for a bougie, which can remain *in situ*. We can, as I have just said, withdraw the endoscope, and try to introduce an elastic bougie; this is, however, an uncertain process, and it is best, whilst the endoscope is in place, to take advantage of it for the purpose of well placing the bougie.

For this, a whalebone bougie must be used, soft ones cannot be properly directed. I have sometimes used bougies of catgut, but they are worse than whalebone. These should be elbowed like the probe, so that they may be kept at the sides of the sound. We then substitute the whalebone bougie which we cause to follow the same way. Like the first, it sometimes stops after passing the stricture, because it catches in the curvature of the urethra. Without effort to go farther, the endo-

scope is to be withdrawn, leaving the probe in its place. To do this, press it gently whilst the instrument is retracted. Once isolated, it can be made to enter the bladder; but, in difficult cases, where success is not immediate, fix it in its position, and, after a few hours, it rarely happens that the attempt does not succeed. I will not rest on the subject of dilatation, only saying, the first bougie must give way to a larger, patience and dexterity are alone necessary. To demonstrate to you the advantages of the endoscope, and especially where ordinary means fail, I will recount a case of M. Civiale, with his given permission;—

Traumatic Stricture.—Futile Attempts at Catheterism.—The Introduction of a Bougie by means of the Endoscope.

M., (Paul,) aged 36, a cook, and a patient in the Necker Hospital. The patient is healthy, has never been very sick. When about 28, he contracted a blennorrhagia, which was well cared for and cured.

About five years since, he slipped on the stairway and wounded the perineum; a physician, called at the time of the accident to stop the abundant bleeding, tried, fruitlessly, to pass a catheter; an able surgeon, later called upon, was not more successful. The hemorrhage ceased of itself, the patient easily urinated, the jet was notably diminished, but the patient did not complain.

Some months afterwards, the diminution of the jet became great, and soon the urine was discharged only by drops; later on the discharge was involuntary, and this condition continued for about four years. As a consequence of excessive work, total retention came on, and it lasted two days.

The patient then decided to enter the hospital in which the surgeon who had ineffectually attempted to sound him was on service. A stricture of four months standing, under the pubic arch is found; it cannot be traversed. Urethrotomy is practiced; the operation lasts twenty minutes; the opening into the canal cannot be found; the wound is soon cicatrized.

Shortly after his exit from the hospital, as a consequence of

drink, it returned, with fever, retention, loss of mind, and delirium. Catheterism was again vainly essayed.

Three days after, Dec. 22d, 1862, the patient came to the Necker Hospital, with slight fever, sleepiness, and small appetite; the urine passed only by drops, and when he was up the passage was involuntary. M. Civiale tried for twenty-eight days, without success, to produce a cure. Bougies of all kinds and of all sizes, wax, whalebone, caoutchouc, and metallic, all in vain. These bougies and sounds could never strike the opening. No accident occurred and not much pain was felt.

8th Jan. I, with the help of the endoscope, tried to find the opening in the stricture; a medium-sized canula was readily introduced to the retracted point; the membrane was white and shining, cushion-shaped (*bourrelet*); many depressions were also seen, which I tried to pass with the probe and with bougies of whalebone; the attempt was futile, the pain great, and further examination postponed.

On the *11th Jan.*, I found an orifice, into which I introduced the stylet, to the extent of about one-third of an inch; the whalebone bougie was left *in situ*. On the morrow there were some symptoms of fever, which disappeared the next day; there were also vague pains in the region of the right kidney.

On the *13th Jan.*, the stylet was again introduced and penetrated farther; a whalebone bougie was left in its place; in the evening it became deranged, and the nurse, in attempting to bring it right, passed it into the bladder, without difficulty or pain.

The bougie was fixed and kept so until the *19th of January*, when, during the night, slight fever and difficult urination caused the patient to withdraw the bougie, which was the next day replaced by a small sound. The patient experienced no inconvenience from the presence of the sound; the urine passed between the sound and the canal.

On the *29th Jan.*, the sound was withdrawn and a larger one inserted.

All efforts were made by those whose ability none could doubt, and unsuccessfully. Then, M. Civiale asked me to try

the endoscope, thinking, with me, that if it failed, there only remained urethrotomy to be resorted to, and you all know the result of that operation. I found the orifice, and proposed to to incise upon the stricture, but M. Civiale preferred the means he generally employed.

I will no longer press upon you attention the advantage of the endoscope in such cases; you must have seized them before now. But there are other cases, where this instrument has enabled me to avoid opening the bladder either by puncture or by the knife.

The obstacle once overcome, dilatation by bougies may well be employed, and I have long used this method. At first sight it seems the least dangerous treatment, if used gently and patiently, but a more careful investigation will cause another opinion. In inodular strictures, the dilatation often requires time; at the commencement, especially, it may be necessary to pass the same bougie several times without changing it for a larger one. Moreover, the treatment may bring on an attack of fever; some patients are subject to it after the most easy catheterism. The sulphate of quinine, given at each introduction, will, necessarily prevent this. But if this course has to be persevered in, the treatment will not do. In other cases, urethritis, cystitis, and nephritis are a consequence; and when resumed after several days, we find we have lost part of what we had gained, the tissue has again retracted, and we are lucky if we do not find the parts in the same condition in which we commenced the treatment. Well, suppose these accidents do not occur, or, after having passed them, is the patient nearer a cure? No! Many of our patients have been cured several times. Really, these retractions are, as I have told you, inodular in form and analogous to a cicatrix, and, when once dilated, they return as do the contractions occurring after a burn. The following observation will show this:—

Coarctation of the Bulbo-Membranous Portion of the Urethra.—Dilatation.—Rapid Relapse.—Urethrotomy.—Cure.

B., (Louis Joseph,) aged 60, potter by trade, was in the

Necker Hospital. He was pale, thin, with soft flesh; had been a soldier in Africa; had had tertian fever; also, at 36, clap, treated and cured, at the end of six weeks, by injections of sulphate of zinc. No new case was contracted, according to his account, since then. From time to time, he did drink too much, but otherwise his life was regular. Some five or six years since, he was retaken with his tertian, at Paris, and entered this hospital. He was treated with the shower bath.

About twelve or fifteen months ago, he first observed a difficulty in his micturation; he could not long retain his urine, and, whenever pressed, was forced to evacuate it at once. Gradually the jet became finer, of less force, and, notwithstanding his efforts, it was difficult to completely empty the bladder, even after long, continuous attempts. These symptoms were most marked after his meals and especially so if he had taken too much wine. He, fearing catheterism, never was willing to subject himself to treatment.

On the morning of the 29th November, upon waking up, he could not pass one drop of urine, and could not attribute this misfortune to any cause. He remained in bed, with slight and repeated chills, nausea, great thirst, pain in the gland, the perineum, and great tenderness in the belly. Thus he passed the day at home, hoping that he would soon be well, but the symptoms increased in violence and about midnight he concluded to ask hospital aid. The assistant on duty tried to introduce a metallic sound, which was stopped in the perineal region. A considerable hemorrhage occurred, the patient returned to his home, and the next morning came to the consultation.

30th November. The patient was much frightened and suffering, there was also great pain caused by the pressing desire to make water; the least movement caused a revival of the intense pains, his face was contracted and anxious, his mouth dry, his belly tender and swollen from the effects of the distended bladder, which reached the umbilicus. The testicles were retracted towards the inguinal ring, in half erection, slightly turned upon themselves; the pulse was accelerated; the respiration irregular and rude. I introduced a conical bougie No. 4, which, after

several trials, pierced the stricture, located on the bulbous portion of the urethra. There it was pinched and could go no farther. Then, the bougie withdrawn, the patient passed about a cupful of urine, with great difficulty and in scattering drops. The bougie was then reintroduced, left for fifteen minutes, and then urination, like the previous, again took place. Cataplasms were ordered for the lower belly and perineum, and in the evening the patient was somewhat relieved, and passed, by drops, about a half glass of urine; the bougie was reintroduced. He objected to an operation.

2d Dec. The same bougie introduced twice during the day; the micturition easier; the bladder sensibly emptied, and occupying only two-thirds of the space between the pubis and umbilicus; sometimes the jet is continuous, but filiform. The urine, however, passes involuntarily in the bed.

Dec. 3d. During the night a chill. We left the patient quiet.

Dec. 10th. No more chills. The urine is sufficient. There is no complaint of the bladder, and when the desire to urinate occurs, the passage of a few drops gives relief; still dullness on percussion continues over the pubis, there is no fever, the skin is moist and even sweaty. His appetite is gone, a little weak tea (*tisane*) is his only diet; food is disgusting to him. His lips are swollen, and salivation is abundant. An examination revealed great swelling of the entire mucous membrane, which was covered by a pultaceous layer, surrounded by a red circle, and the parts are very painful.

A portion of chlorate of potash as a gargle, and honey of roses, with chlorhydric acid as a collutorium, are needed.

Dec. 11th. By the endoscope, we reached the retracted part of the mucous membrane. It was of a mother of pearl white. In its centre there was a small red point, the opening into the coarctation, very free by the passage of a sound.

The following day the dilatation was continued; Nos. 6, 7, and 8 bougies were used. An erysipelatous phlegmon of the right eyelid occurred and was cured. The patient, however,

was always broken down in spirits, and suffering; nevertheless, he passed sufficient urine to keep the bladder more or less free.

1863, Jan. During this month, the condition of the patient did not improve, on account of the difficulty offered the treatment, much by the coarctation, which would only admit a fili-form bougie (say from two to four-fifths of a line), and by the indocility of the patient.

Feb. 3d. The elastic bougies were replaced by the finest of Béniqué's sounds, and gradual dilatation permitted the introduction of No. 35.

Twice, during the month of February, the patient was taken with chills, as at the commencement of the attack, and which yielded to quinine.

The general condition of the patient is bad, the feebleness extreme, there is no appetite, the stools are diarrhœic in their character, so much so, that at the end of February the local treatment had to be suspended to prevent a return of the fever.

March 10th. The coarctation is so great that bougies of the elastic gum, used early in January, have not been able to penetrate the bladder. In this first effort we have sometimes been compelled to leave the bougie in front of the retraction. The next day, they cleared it, and gradual dilatation was recommenced with the sounds of Béniqué.

March 17th. No. 32 has been reached, but then the patient executes his threat, many times repeated, and demands his exit from the hospital.

March 21st. He comes to the consultation, and begs to be permitted to reënter the wards. The stricture is so much reproduced, that the most fine bougies will not penetrate.

April 3d. Urethrotomy is practised by aid of the endoscope. This operation presents no difficulty, and is not accompanied with any hemorrhage; an elastic sound, of medium size, is immediately introduced and fixed in the canal. During the day, the patient withdrew the sound, and no further accidents were presented.

On the morrow, dilatation, or, rather, separation of the lips of the urethral wound, is easily continued.

From this time, his strength, appetite, and a better color of the stools, all unexpected, are evident, and, at the same time, the urethra remains sufficiently dilated without daily catheterism.

April 20th. The patient wishes to go to Vincennes, the general condition is not changed and is very satisfactory. The local condition may be appreciated by the fact that, at the time of his departure, a sound No. 41 penetrated the bladder without difficulty.

We have already said that strictures once formed are rarely cured without danger of a relapse; a like cure is almost impossible if the period of granular urethritis is once passed. Relapse, in such cases, is slow to occur; the cure generally lasts for some years; and to keep it up, it is only necessary to pass, at long intervals, a large-sized bougie. On the contrary, when the fibrous retraction occurs, a few days, as in the preceding observation, or a few weeks will suffice to reproduce it after dilatation, and each day, thus to speak, the patient should be sounded. Thus, this is not, properly speaking, a disease threatening a relapse, but one that never cures, and condemns the patient to continual treatment. The first condition is supportable, this is not: and, moreover, when the patient willingly submits himself to it, circumstances of some kind, an intercurrent affection, or some other, occur to compel the cessation of treatment, and then the disease assumes the mastery. It thus becomes necessary to find some more efficacious treatment. To this end, rapid dilatation, cauterization, incision, and excision have been proposed. Of all these means, excision alone is retained. In sudden dilatation, two effects may happen, there is either simple dilatation and a relapse comes on, as after slow dilatation; else there is a tearing of the tissue, and in such case the danger is as great, if not greater, than after urethrotomy. You may recollect a patient, brought here some months since. The next day quick dilatation was resorted to by the inventor of an ingenious instrument; a large urinous phlegmon was the result, and also gangrenous eschars. The patient died in two or three days after entering the hospital.

I have but little to say upon the subject of cauterization as a

means of radical cure of coarctation, or of reëstablishing the canal by destroying the new tissues, when the obstacle cannot be passed. I will not repeat all of the opprobrium justly assigned it; one will be sufficient. If it destroys the morbid formation, it is only to replace it by another, more retractile. I do not now call to mind one of my colleagues who is a partisan of so irrational a means. Several times have I encountered the victims of this operation, and never have I seen strictures more difficult to treat, and more rebellious. In all of them the cauterization left them worse than when in the primitive state.

I also throw aside excisions, notwithstanding the injurious inventions to which they owe their birth. They are especially addressed to hypothetical lesions, to very thin valves, the existence of which is not proved, and which must be very rare, in any and every case. This has never assumed a scientific status.

Incision remains to be discussed. As you know, there are two methods by which it may be practiced:—In one, all the parts, from the skin to the urethra, are traversed, this is *external urethrotomy*; in the other, the tissues forming the retraction are cut by instruments introduced into the canal, this is *internal urethrotomy*.

For the first, there are two processes:—It can be performed by directing a cutting instrument upon a conductor; or else in seeking the canal through the soft parts without a conductor. In the first case, it is necessary that the stricture will admit of the introduction of a catheter, whence dilatation is commenced, so that its passage is made possible; and in such case, internal urethrotomy may be performed in the ordinary manner, and with less danger and pain. True, it has been stated that the cures of external urethrotomy are more durable; others, however, have denied this result, and for my part, in two cases in which I have performed this operation, the relapse was not long in taking place; so to speak, it occurred at the same time as the healing of the perineal wound. In a third case, operated upon by one of my colleagues, I was forced to perform the operation of internal urethrotomy for the purpose of removing a coarctation produced immediately after an external urethrotomy

had been made. These three examples have been sufficient to debar me from performing this operation.

But external urethrotomy is an operation sometimes necessary, and one which should not be rejected, for it may happen to be the only resource left when all others have failed; it is, however, dangerous, difficult, and, what is worse, uncertain, as you have seen by my observations, when it was tried by a surgeon, who, despite his ability, could not terminate the operation. I thus am forced to believe that one of the greatest merits of the endoscope will often be to replace external urethrotomy, by a process but slightly dangerous.

Now let us turn our attention to internal urethrotomy. Its advantages are calculated to procure a more prompt and certain cure, to afford less chance of relapse, much less severe, in substituting upon the retracted part, a somewhat retractile tissue, for one thick, hard, inodular, and difficult of retractility. Thus you see that this method should not be resorted to, except in the last stages of coarctation, for inodular retractions.

The modes of internal urethrotomy are, naturally, divided into two, incision from front to rear, and its reverse; let us add a third, endoscopic urethrotomy, the principles of which are different, and which present many special advantages.

To incise a retraction from behind forwards, it is necessary to pass an instrument sufficiently large, and one which is brought forward after the passage of the blade previously concealed. This cannot be used save in coarctations of a certain size, or where dilatation has been effected to a certain extent, of which the length or extent, and accidents found at the commencement of the cure, are not avoided by this method. It does not serve to render the cure quicker, but only more certain. It has been preferred until the incision from front to rear, made by sure instruments, such as those of MM. Sédillat and Maisaneve, made the operation sure. The last instrument you have seen me employ, and you can judge of its excellencies.

It will be of great service; it can act upon very restricted coarctations, and, consequently, without previous preparation in many cases, thanks to the size of it. It requires a conductor,

and in some cases, where the opening cannot be found, a long search may be necessary. Small as may be the passage it requires, that passage requires preparation, and this is the most difficult and the longest treatment of the most decided coarctations. Be the treatment what it may, a conductor must be first passed, and often, so as to prepare the passage. The endoscope alone enables us to decide if other instruments will permit us to diagnose correctly. No other method furnishes a certain means of recognizing the disposition of the obstacle. No other process furnishes any means of surely knowing the situation of the obstacle, and, consequently, of judging upon which side it is best to turn the cutting edge of the instrument, whence it often happens, if the accidental tissue only occupies one side of the canal, the incision is made upon the healthy portion. Now, I think it best to cut, in such cases, the diseased parts; they are less sensitive, less vascular, less disposed to immediate adhesion; on this account, I always attack the thickest part for the purpose of making the incision, and, possibly, owing to a strict adherence to this rule, I may owe my success, never having had a serious accident from twenty cases of endoscopic urethrotomy. Before speaking of the advantages possessed by these means, I will describe to you the way of employing them:—

The instruments (uréthrotomes) which I employ are simple probe-pointed bistouries, with a cutting edge of about four lines, the blade small and thin (*délié*), and in a handle bent at an angle in the stylet I have already described. Having vision to aid us, it is not necessary to employ the same means required by like instruments to conduct the cutting edge and to protect the healthy parts from their action, as without the endoscopic aid. It is necessary to have urethrotomes of two kinds, one with the cutting edge below the handle, the other with the cutting edge above and opposed to the handle. The button or probe point should be no larger than that on the stylet.

Before incising, the opening must be found by means of a stylet, as previously said; then the stylet being withdrawn, the urethrotome is passed to the previously recognized orifice. Once there, by gentle pressure, not by jerks and thrusts, the

instrument readily and easily passes. If the passage is tortuous, its cutting edge acting on the more salient points, it makes its own way. Once introduced entirely through the extent of the obstacle, we withdraw it, pressing slightly so that the blade may completely divide the inodular tissue; this done, no more pressure must be used.

If it becomes necessary to reintroduce the instrument, to make a new incision, or to enlarge the previous one, press it towards it back, so that its probe point, in passing the wound, cannot pass from the bounds of the urethra.

Formerly, I made two, and sometimes four incisions; recognizing the futility of this, I now never make but one. When I see two inodular masses at the end of the instrument, I may deem it necessary to divide both.

When we see masses or fibrous filaments at any one point, towards this point the cutting edge must be turned, and we should endeavor to completely divide the pathological structure. If nothing indicates the side to be cut, I choose the upper part of the canal, for, upon this surface, there are less dangers, as Reybard remarks, and, besides, should it become necessary to again operate, there is less chance of the urethrotome passing through the wound, and less danger if it does.

The incision thus made is not very painful; it is slightly, if at all so, when the tissue is inodular. It is also a fact, that in such cases little or no blood is lost, and what is may be promptly arrested.

The only accident I have yet seen, as a consequence of urethrotomy, is an access of intermitting fever, and this I have never found, save in such cases where it had been induced by previous catheterism; so, when compelled to operate upon a patient previously thus affected, I order to be given in the morning, $11\frac{1}{2}$ grains (*60 centigrammes*) of the sulphate of quinine, and 10 drops of laudanum in an infusion of valerian, all by injection. By this treatment, but one accident has supervened, and this though nothing else has been done to prevent a recurrence. There is a curious fact connected with this urethral fever. At certain times, almost all patients sounded are at-

tacked; at others, scarcely any are affected; so it seems to be under epidemic influence, and is generally most common when intermittents otherwise prevail. In our wards last year, for several months, intermittent affections prevailed, they attacked, indifferently, patients affected in all sorts of ways, fractures, contusions, white-swelling (*tumour blanc*), ophthalmia, etc. The form assumed was sometimes neuralgic, then febrile accesses of fever, generally of the quotidian type, rarely tertian. Whilst this epidemic lasted, the urethral fever affected almost all who had a retention of urine; after urethrotomy, after simple catheterism, after any violent effort to expel the urine, an access would occur. I could, however, continue the treatment, aided by the effect of the quinine, the action of which seemed to be as powerful in such cases as in marsh fever.

As to the care given after an operation, I introduce, immediately after the incision, a large-sized sound, not sufficiently to distend the cut violently, but large enough to keep the incision open, and also to give issue to the urine. I am well aware that some surgeons object to a permanent sound in the urethra, and accuse it of many accidents. So far as I am concerned, I have not observed them. I, moreover, think too much importance has been given to such cases; the resting sound, in such cases, does not seem to me to exert so much influence as is generally attributed to it; it neither possesses the merit some ascribe to it, nor the dangers expected by others; suffice it to say it is painful and its presence inconveniences the sick person, I do not, therefore employ it.

I generally withdraw the sound on the fourth or fifth day; then I complete the cure by the metallic bougies of Béniqué. These bougies are not well adapted to general dilatation, but they seem to act especially upon the affected point.

Urethrotomy, effected by means of the endoscope, partakes of the advantages of the other processes, it has also its peculiar advantages. Like the other treatments, it may cause a radical cure, but more time is necessary after dilatation. There is reason why I should insist upon urethrotomy, a single case that I will shortly report, will fully exemplify that, in certain cases,

dilatation affords but temporary relief, whilst incision alone produces a cure.

Endoscopic urethrotomy is preferable to all other means in this, it shortens the treatment, as it does not necessitate any treatment of a preliminary kind to pass the coarctation, and in itself furnishes the means to go through the obstacle, while the methods aiming to act from rear to front require, first, the introduction of a conductor; at the same time, this method enables us to see exactly the position of the stricture, and, of necessity, to properly direct the cutting blade. We have already seen that the endoscope often enables us to decide if urethrotomy is necessary, and to be certain of the fact.

Really, the greatest advantage of this method is, that it furnishes a means to overcome an obstacle, rebellious to all other means. I am convinced, and think you are, that the endoscope will often enable us to discover coarctations, and to practice immediate urethrotomy, in cases where other means would not only require time, but might fail entirely. The endoscope may render unnecessary, or, at least, the necessity very rare, for the puncture of the bladder and external urethrotomy without a conductor.

The following cases, in addition to those due to M. Civiale, will suffice, I think, to demonstrate the advantages of the new method. It is necessary to state that, in several of these cases, the stricture could not be passed by ordinary means, and, consequently, intra-urethral incision could only be used by means of the endoscope.

Stricture of the Urethra.—Catheterism, by Ordinary Means, Impossible.—Endoscopic Urethrotomy.—Cure.

On the 22d of February, 1863, Charles F., 34 years of age, a mechanic, married, came to Necker Hospital.

This man was of a vigorous constitution; as to anterior affections of the urinary passages, he only admits of a slight blennorrhagia, contracted fourteen years previously, and cured in a few days without sequences.

The actual disease was caused by a traumatic effect. In

February, 1862, the man stumbled and fell from half a yard (*demi metre*) in height, upon a bar of iron, striking heavily upon his perineum. Spite of this, he continued his work, but soon the pain became so great that he was compelled to go home. There was weight in the perineum and anxiety to urinate, an anxiety that could not be obeyed. A physician was called, introduced a catheter, and brought off clots of blood. For some days, the sound was introduced from time to time, then its use was suspended, the patient urinating with facility.

The cure seemed complete, there only remained slight pain near the bulb; but in four or five months micturition became painful; the stream diminished daily; and in September, the water passed only by drops.

M. Chaudemont was consulted. He tried, with failure, to introduce bougies, and ultimately recommended external urethrotomy, a process rejected by the patient. Soon the patient, ever tormented with dysuria, went again to M. Chaudemont. Catheterism could not be performed then. After a month of fruitless efforts, M. Chaudemont sent him to me. I several times attempted to introduce the bougie, with like success, or the want of it.

In the first and second explorations of the endoscope, I found the orifice in the bulbous portion, and, on consultation, M. Chaudemont and myself concluded, if another examination was not more happy, an external urethrotomy made by this able surgeon, without a conductor would be necessary, an operation to be practised by him.

So, on the 28th February, a third exploration exhibited, in an irregular surface, mammelonoid of the dead white of coarctation, with restricted orifice at the left inferior part of the urethra. The orifice was much contracted, and I substituted for the former treatment the whalebone bougie, which I left in place, withdrawing the endoscope. The following day, a very fine bougie could be introduced in the ordinary way.

On the 5th March, the pain forced a cessation of any attempt at catheterism.

March 8th. After a renewed and fruitless attempt at cathe-

terism, urethrotomy was decided on. By aid of the endoscope, I passed a stylet, introduced an urethrotome, and completely divided the inodular tissue, above and to the right, in its densest part. But few drops were lost. An elastic sound No. 13, was then introduced, to remain some time.

Up to the 13th March, the sound was retained without any accident; then it was withdrawn, and a No. 34 Béniqué bougie introduced. Gradually, the size of the bougie was increased; at the end of eight days, No. 54 (*plus de 8 millimetres de diameter*), say three and one-fifth lines English measure, passed readily. The patient having educated himself to pass the sound and his urine readily passing, left the hospital, recommended, however, to occasionally introduce a bougie of large size.

Stricture of the Urethra without Previous Dilatation.

T., aged 60 years, a shoemaker and married, was in the Necker Hospital.

This man had been a soldier, and, naturally, addicted to women and wine. When 21 years of age, he contracted his first blennorrhagia, and entered a hospital at Strasbourg, there he was treated by lotions and injections. Two years after, he had a second. He went into a Montpellier hospital, staid there about a month, and left without being cured. The discharge continued for some four months, abundant, accompanied by long and painful erections; he made no change in his habits, as regards coition and the imbibing of alcoholic drinks; he thought he could cure the disease by these excesses. There was neither chancre nor bubo. He kept up, and does still, this mode of life. He has had clap, he knows not how long, and may even have it now. Whenever he drinks too much, urination is difficult, and a white drop appears at the meatus before the urinary emission; little by little, the difficulty of micturition becomes permanently established. In 1849, he entered the hospital at Brest, where he learned to sound himself, and whenever urination became difficult he introduced the sound himself. After that, micturition was easier, but he was not sure that the bougie entered the bladder.

It is now several years since the stricture has reached its present point, that is to say, the man cannot hold his urine when the desire to pass it seizes him; he cannot stop, once its flow has commenced; there is no pain in this, no great effort, but its duration is more or less long; the jet is very fine, sometimes bifurcated, one portion being projected, ejaculated, whilst the other follows vertically. The ejaculation is always made normally. For three years, his condition has been the same.

Upon his entry into the hospital, I attempted to pass bougies Nos. 6, 5, 4, but ineffectually; they could not clear a first coarctation in the spongy portion, but were arrested under the symphysis. Large wax bougies were introduced up to this point; the patient retained them as long as possible, and from them he experienced relief; he urinated more easily, but since the catheterism experiences almost constant pain in the gland; drops of blood flowed from the meatus on the withdrawal of the bougie. During the day, the urethragia continued, his shirt was blood spotted, and, squeezing the urethra, drops would appear.

26th Feb. Every day a large bougie was introduced and moved back and forth (*à frottement*) in the spongy portion. This day, an endoscopic examination was made. The tube passed up to the second retraction, demonstrated a very contracted condition, so much so that the stylet nor a whalebone bougie could pass, save by the point into the orifice; the bougie was left in place; a considerable discharge of blood occurred upon the withdrawal of the instrument; the blood must have come from the first stricture, for the second was seen to be fibrous and not vascular; no blood was seen to come from it. All day the blood flowed drop by drop.

Injections were ordered, say 17.434 Troy grains (5 grammes) of the perchloride of iron in 3086.800 parts of water (200 grammes). In the evening he complained of chilliness, turkey flesh feeling (*chair de poule*), and headache.

During the month of March he was left quiet, the injections were continued on account of a slight muco-sanguineous discharge, which persisted and was increased by each exploration.

3d April. This day, the patient being in good condition, the stricture was cut. The tube was put in place, a bistoury with a superior cutting edge was introduced, and two superior incisions made upward, one to the right the other to the left, the discharge of blood and the pain were but slight. A sound of large size was introduced readily into the bladder and there fixed, with but little pain and no chills. The evening was comfortably passed, with some muco-sanguineous discharge between the borders of the meatus and of the sound.

5th April. All goes well, the patient scarcely feels the effects of the operation. The sound is withdrawn; urination is facile.

April 6th. He complains of lively pains at the meatus, increased by the passage of urine, slightly difficult at this point. There is some œdema of the bridge and, in separating the lips of the orifice, a small patch of herpetic vesicles. They were cauterized by the nitrate of silver.

8th April. The pain is calmed, and there is a renewal of the cauterization.

9th April. He urinates well; a bougie of Béniqué, No. 39, is easily introduced into the bladder.

10th April. Exit.

Coarctation of the Bulbous Portion.—Ordinary Catheterism Impossible.—Endoscopic Urethrotomy.

B. (Désiré), 50 years of age, married, and a house porter.

This man, pale, thin, of a feeble and lymphatic constitution, easily worn out by work and prolonged vigils, had never been guilty of any excess. When 31 years of age, a few days after sexual intercourse, a tumor, the size of a pullet's egg, formed in his right groin. It was red and painful, did not suppurate, and continued for two weeks without preventing work, and that too without either chancre or discharge. He continued to lead an irregular life. Four years since, for the first and last time, he experienced a slight blennorrhagic discharge, a little painful, and one curing itself in from fifteen to twenty days, and that without treatment.

He found himself well until three or four months since, when

he perceived his urinary jet slow and very short. Little by little, he was obliged, during the night, to discharge his urine every two hours, with but little at a time, and that voided with difficulty. On the 31st December, after a slight excess, that is, a cup of coffee and a half bottle of wine, urinating became impossible; he also experienced much suffering through the length of the penis and in the perineum, and was forced to keep abed. The pain increased with the mictatory efforts.

When he entered the hospital, 8th January, 1862, the patient suffered somewhat; there was a bearing down weight, also lassitude in the perineum; micturition took place either as a thin thread, or else drop by drop.

Catheterism showed a coarctation near the bulbous part. Bougie No. 4 penetrated it and then rested, pinched by its point. In the perineum, a tolerably hard nodosity was felt.

An endoscopic examination showed a stricture, into which the stylet might be introduced, and upon its left wall an ulceration giving issue to some blood. The catheterism gave rise to no accident.

11th Jan. A No. 3 bougie will not penetrate, it comes out twisted and bent upon itself.

16th. Every attempt to introduce the same bougie is fruitless. With the endoscope, the stylet was introduced, and then the whalebone bougie, which was fixed in the retracted part, the patient to retain it until the desire to urinate was felt.

17th. Yesterday, after having withdrawn the bougie, the patient could urinate more readily, in fact, there was a great amelioration; but in the morning the retraction returned, and at the same point. The bougie could, however, enter and remain, pinched at its point. In the evening, the patient said he was able, during the day, to pass it entirely.

22d. Endoscopic examination. Introduction of the whalebone bougie, well protected (*bougie de balcin gardér*), for two hours. The patient does not suffer, the urinal jet is more easy, but scattering.

23d. The endoscopic sound was introduced up to the retracted point; at this point a bistoury was inserted, and the

indurated tissues, in all of their superior surface, divided. The discharge of blood was but little. Immediately after, a No. 20 sound could pass; it was stopped by an obstacle beyond the prostate, but ultimately reached the bladder. The urine freely flowed, the subject was relieved, though, as a result of the operation, he was chilly, and, with a feeling of faintness, returned to his bed. Cataplasms were applied to the lower abdomen and to the perineum. Soon, heat and good feeling sensations reappeared. A conditional injection of sulphate of quinine was prescribed. In the evening, the patient was in good condition, had urinated well, suffered but little, had no chills, and was in a state of gentle moisture. The injection was not given.

24th. Same satisfactory condition. The sound remains in place.

25th. Doing well in the morning. Going twice, during the day, to the privy, was seized with a violent chill of about two hours duration, and followed by fever, sweating, indisposition, prostration, and headache. Ordered the following enema:—*R*. Valerian 2 gram. (say grs. 80 $\frac{1}{4}$), quin. sulph. 50 centgram. (grs. 8), camphor 2 gram. (grs. 80 $\frac{1}{4}$), Laudanum of Rousseau gtt. 10

27th The patient has done well these two days past, suffering but little, with neither chills nor fever. The sound is withdrawn; the discharge is sero-purulent.

28th. The patient urinates easily, and, according to him, with a larger jet than ever before; he might be considered cured, were it not for a slight muco-purulent discharge, and still some pain during, but especially after, micturition.

3d Feb. A bougie of white metal, No. 28, (equal to Carrière's 21,) was passed into the bladder.

4th. Bougie 29

13th. The same bougie introduced each morning, and retained for an instant. An endoscopic examination reveals no cicatrices from the incisions. The condition, general and local, is excellent.

14th. Discharged.

Stricture of the Spongy Portion of the Urethra.

P. (John), aged 42 years, a shoemaker by trade, married, and in the Necker Hospital.

This man is of good constitution, and has never been sick. At the age of 21, he had an intense blennorrhagia, which appeared after nine days' incubation. He was accustomed to drink largely of beer and wine, without, however, committing many excesses, and exercised himself as a baker, which fatigued him much. He did not change his habits and used no treatment but tisanes; the discharge was abundant, the pains severe, the nights tormented by prolonged erections. Three weeks after, not yet cured, he had new intercourse with women, and renewed them oftener twice than once a week. He also opened a wine store, which did not tend to prevent his drinking. One year after its commencement, the discharge was still abundant. During the second year, it diminished little by little, and existed only in the form of a drop of pus, which he forced out in the morning. This, too, soon left of itself, though he gave up neither wine nor women. He then passed fifteen years without inconvenience. In 1857, he perceived, for the first time, after a slight debauch, that it was difficult for him to urinate, the stream was small, and only voided by great effort. The following days the micturition was more facile, but after every excess, say on an average each eight days, there was a new retention. He consulted a physician, who, fruitlessly, attempted to pass bougies into the bladder, and had caused but little relief; the dysuria increased with each and every excess. The ejaculation was with difficulty made, and meantime the sperm flowed like saliva. During the past two months, these last symptoms are especially manifest. The retention of urine is more complete and accompanied by acute pain. The urine only passes in a fine jet, and that falling perpendicularly, and sometimes in a spiral formation. His general health becoming affected, he concluded, by the advice of his physician, to enter the hospital.

4th Jan. A large sound was introduced into the urethra, it passed along the spongy portion, but was checked at the junction of the bulbous and membranous parts; it caused to project

into the perineum hard nodosities, readily felt by the fingers. A No. 5 bougie could be readily passed, with a slight discharge of blood; it was kept *in situ* for about two hours, then, on being withdrawn, the patient urinated somewhat more readily.

5th Jan. A No. 7 bougie is readily introduced, but remains pinched by the coarctation; it was left about two hours. The urinary function is more easy.

6th Jan. The patient is fatigued; he has had no stools since his entrance into the hospital; a bottle of Seidlitz water was ordered. The result was, not large evacuations, slight chills, and pain in the loins. He remains in bed, and takes only a light soup.

7th Jan. Leave him quiet, and give an enema, as follows: R_x. Valerian, gram. 2 (grs. 80), quin. sulph. 1 gram. (grs. 40), laudanum, Rousseau's, 10 gtt., camphor, 2 gram. (80 grs.)

8th Jan. This morning, the patient seeming well, the endoscope was introduced, it showed a retraction of the canal of the normal color; the stylet was passed, the mucous membrane in front of the coarctation was perfectly healthy. He passed the day well. At 3½ P.M., he took an enema of quinine, after having first taken a simple one which brought away much fæcal matter; immediately he was seized with dizziness, palpitation, nausea, cold sweats, vertigo, and ringing in the ears. A few glasses of Seidlitz water and coffee without milk, and the sickness was allayed.

9th. This morning the patient does well; rest is given him. He is purged with a bottle of Seidlitz water, and takes an enema of 10 grs. (50 centigrammes) of the sulphate of quinine. In the evening he experienced the same symptoms as on the previous day, but less decided.

11th and 12th. The injections are repeated, and no return of the sickness; the febrile symptoms have not reappeared. A No. 4 bougie was introduced and left in for two hours. He experienced a pricking sensation in the canal, and some drops of blood came out with the first drops of urine after the withdrawal of the bougie. The flow is somewhat larger.

13th. This day was well passed; the enema was countermanded.

14th. The endoscope was again employed this morning. About 3 P.M. he had an intense chill, faintness, thirst, nausea, and pain in the kidneys; micturition was very painful, and for some hours left a condition of sickness.

15th. He was better. A bougie, No. 21, was introduced as far as the stricture and left for fifteen minutes, for the purpose of decreasing the sensibility of the canal and of dilating the coarctated spongy portion. The evening found him slightly fatigued, the bougie was reintroduced, and the injection discontinued.

16th. Same condition. Seidlitz water.

30th. Every day a large bougie has been introduced as far as the stricture; the general health is good. The endoscope is now applied, and a superior incision made the length and thickness of the coarctation. The discharge of blood is but slight. Immediately after, a No 20 bougie is introduced and fixed; the urine flows, the inconvenience to the patient is slight. In the evening he complains of sharp pains in the part operated upon, radiating towards the anus, but without either chills or fever. An enema of quinine is prescribed. The urine is freely passed, and there is a sero-purulent and somewhat sanguinolent discharge between the sound and meatus.

Feb. 1st. Condition satisfactory; sound withdrawn; bowels costive; tongue white; loss of appetite. Seidlitz water.

2d. Discharge diminished; still some pain in urinating, the flow being neither strong nor rapid, but better than before the operation. There is some suffering in the perineum and in the lower belly. Cataplasms.

5th. A No. 22 bougie introduced and left in place for ten minutes.

6th. Bougie No. 23. In the evening, chills and discomfort.

7th. Pass a smaller bougie and withdraw it immediately. During the day, he experiences slight chills, indisposition, a natural condition, and considerable pain in the parts cut. Injection of quinine.

11th. Each day, a metallic bougie is introduced and at once withdrawn; the urine passes well, but he is fatigued; his eyes are encircled, and almost every day he experiences slight chills.

20th. Sounds of Béniqué, Nos. 30 to 37, successively introduced without difficulty or pain. The condition of the patient, and by his own acknowledgment, is much improved.

22d. Bougies 35 to 41 sufficiently large. The patient complains of nothing, is up, eats heartily, urinates easily and without pain, and may be considered as cured.

Among the accidents which may be the consequence either of stricture or of traumatic lesion of the urethra, but few are more serious or more distressing than urinary fistula. To give their entire history would lead us from our legitimate subject; thus we must be content to confine ourselves to the results of endoscopic aid in their cure.

The usual treatment of urethral fistula consists in the employment of permanent sounds or repeated catheterism, after dilatation. By these means, it is proposed to prevent the flow of urine through the fistula, which most frequently cicatrizes when this secretion does not tend, by its passage, to keep up the abnormal opening. Often it is unnecessary to keep the sound in permanent place, as the fistula may cicatrize as soon as the urethra offers no further obstacle to the flow of urine. Unfortunately, it is not always thus, some of these fistulas remain, though the canal may be perfectly free. This persistence may be owing to the presence of gravel in the fistulous tract, or else to more or less separation of adjacent and subjacent tissues. In such cases, extract the gravel, and cause the adhesion of the separated parts. These are the evident indications to be fulfilled. I have succeeded in curing multiple fistulas by the buttonhole treatment of Syme, being careful to incise each sinus. But this is a grave operation, and, moreover, there are some cases kept up by neither gravel nor by decollement, but by the continuous passage of a few drops of urine. Cauterization of the urinal orifice will not avail, for the urine is introduced from above, and nothing can impede its effect upon cicatrization; or, if the lower orifice should close,

the effusion will soon reopen it. What, then, must we do to cause the closure of these fistulas? What, then, must we do to cause cicatrization. Modify the internal orifice. Cauterization of this orifice furnishes the most proper means to bring about this result, by freshening the parts, bringing about a healthy granulation, and also producing a temporary obliteration of the opening by the swelling of its borders and by the eschar which protects the farther parts of the urethra and permits them to rejoin.

Such are the ideas that induced me to apply, by means of the endoscope, the nitrate of silver to the urethral orifice of stubborn fistulas. The process for doing this is most simple:—

Having, by proper treatment, caused the disappearance of all obstacles to the flow of urine and the passage of the sound, by the aid of the endoscope, we examine the urethra from back forwards, until we find the opening of the fistula. This is sometimes difficult to do, because its edges may touch, or it may be located in the midst of an ulceration, but it may generally be discovered by means of a small violet red spot or one of the color of wine dregs. Often, a stylet or bougie can be introduced into the fistula and will show itself at the end of the endoscope, thus indicating its urethral opening.

In a case now in my service, traumatic in its origin, the orifice was recognized by means of a fungous vegetation, similar to those often found at the external opening of urinary fistulas. Two cauterizations destroyed this vegetation and laid bare the opening. The patient is still under treatment. In this operation, eschars, so far from being feared, must be hoped for, they are necessary. A small pencil of solid nitrate of silver, placed in an appropriate porte, should be used; in the absence of a proper instrument, melt the nitrate upon the end of the endoscopic stylet.

When the orifice of the fistula is discovered, nitrate of silver is to be applied, care being taken not to touch neighboring parts; it is to be left a short time, and efforts made to introduce it into the orifice. When it is thought that sufficient action has accrued, the caustic is to be withdrawn, and, to prevent exces-

sive action upon the neighboring parts, cotton impregnated with marine salt should be introduced, to transform the nitrate into an inoffensive chloride.

After the operation, there is but little pain, rather more, perhaps, than after the application of a solution of nitrate of silver, but still very bearable. The day following the cauterization, the passage of urine through the fistula is generally diminished and sometimes completely checked; yet, for all that, it must not be supposed that the patient is well, though such effects, to my great surprise, I have more than once experienced. The swelling which succeeds the action of the caustic soon subsides, the eschar falls, and the urine recommences to pass. Thus it is necessary to wait for some days so as to give the work of reparation time to set up the recommencement. The urine gradually ceases to pass through the fistulous opening, which ends by drying up (*se tarir*), and the cure is complete.

The following case will show the march of the cure:—

Slight Contraction of the Bulbous Portion—Laceration of the Canal behind the Stricture—Infiltration of Urine—Incision—Fistula—Cauterization of the Urethral Wound—Cure.

D., aged 35, employed upon the railway, married.

His general health good. Before his marriage he had a light blennorrhagia, which lasted fifteen days, and then disappeared, he says, without taking on the chronic form. During the past five or six months, however, he has experienced occasionally, and especially when heated, difficulty in urinating.

On the 6th of July, 1862, while transporting baggage to the cars, a heavy trunk fell upon his left ilio-pectoral eminence. He felt considerable pain therefrom, but still continued his work. The next day, the pain continued, and he perceived a small tumor formed upon the course of the left spermatic cord; gradually the surrounding parts became swollen, and micturition difficult and painful. Still this did not impede his work for seven days yet. At length he decided to keep his bed, and called in medical aid. Hip-baths and leeches were ordered; then he came to the hospital.

On his entrance, he could not possibly urinate; he suffered much from this cause and from the tumor, now the size of a hen's egg, vertically elongated, in front of the left inguinal region, now hard and not fluctuating. Catheterism presents no great difficulty and gives issue to much urine, greatly to the relief of the patient.

The marrow, the scrotum, the penis, the left groin, the perineum are the seat of great oedematous swelling. The patient is most anxious; there is pain in the parts; and some febrile symptoms. Four incisions are made, two in the perineum, one in the left scrotum, and one in the groin; thence, came much pus and serosity; the pus without the smell of urine. Cataplasm.

The parts disgorge in proportion to the discharge from the incisions. A few days after, the pus takes on a urinous smell. A sound is left in the bladder. His general condition is excellent; no chills, no fever, and a good appetite.

In a fortnight, two of the incisions are cicatrized; the third requires two months to close; the fourth, situated at the left antero-superior part of the scrotum, remains fistulous, and, when the patient urinates, a portion of the liquid passes through it. He also perceives it in the cataplasm used on the wound. Bougies of Béniqué are passed, from No. 34 to No. 51.

9th Oct. Endoscopic examination, A violet red spot, easy to bleed, is found in the inferior half-circumference of the canal; this spot seems to surround the internal orifice. It is cauterized with a concentrated solution of nitrate of silver, applied by means of a cotton tampon passed through the sound of the endoscope. The permanent sound is withdrawn. The urine, the first time, passes with difficulty and in a scattering stream, but the ensuing day it becomes perfectly natural. The urinary discharge through the wound still continues.

16th. Second cauterization, by means of the solid stick of lunar caustic passed through the sound of the endoscope. During the day, there is a slight hemorrhage; the micturition is properly made about every hour. The discharge by the fistula diminishes in quantity.

23d—30th. The fistulous opening in the canal is again touched with the stick of silver. Metal bougies are passed almost every day. The improvement continues, and, on the 4th Nov., the patient is discharged, perfectly cured, the urethral fistula cicatrized, and the urine passes in a full and copious jet.

FIFTH LECTURE.

The Prostate.—The Bladder.—Calculi.

GENTLEMEN:—We have now finished the study of the application of the endoscope to the diseases of the urethra; but you doubtless recollect that, in speaking to you of urethral granulations, I omitted those affecting the prostate, deferring their description to a later period. With these, we will commence our lesson to-day.

Ulcerations of the urethra, whether granular, herpetic, or arthritic, present the same characters in the prostatic as in other portions of the canal, only they more readily become fungous, and, consequently, it more often happens their character is masked, and thus it may be more difficult to distinguish them. In such cases, diagnosis must be based upon the progress and other symptoms. We must, however, remark that, most frequently, the endoscope will enable us to distinguish between these ulcerations.

Granular ulcerations in the bulbous and membranous region are, as we have seen, the most frequent cause of stricture, in consequence of the organic changes they cause, and which we have fully examined. In the herpetic region, owing to the different anatomical arrangement, retractions do not occur, as I have before said, but the congestion, the irritation kept up by the granulations, may end in a chronic engorgement of the gland. It might be said of the prostate as it has been of the uterus, that it is not the ulceration which brings about the engorgement, but the engorgement which supports the ulceration. It is certain, that in the prostate, as in the uterine neck, there are ulcerations kept up by organic chronic engorgement; but

study them well, and you will find that these ulcerations, which increase and decrease, disappear, even under the influence of treatment, and reappear without apparent cause upon the engorged organ, on ulcerations of an herpetic character, which can be as readily distinguished here as in the anterior parts of the urethra, though they possess less mobility. As to the true granular ulcerations, in the prostate as in the bulb, the uterine neck, or the conjunctiva, once cured, they do not reappear without the reapplication of the exciting cause.

There is no particular treatment for this affection, but if it should be necessary to employ special means, it should be to combat certain complications, such as inflammatory symptoms of the parenchyma of the gland, or of certain accidents caused by a swelling of this organ. For the rest, the endoscope gives us the means of attacking, efficaciously, ulceration which is no longer more difficult to cure than in any other region.

We have seen that the chronic inflammatory stricture heals spontaneously at the same time as the granulations which maintain it, but when it arrives at a certain point, whilst the swelling is more or less inflammatory, and the induration is established, it is obstinate in its course, and is the same as engorgement of the prostate.

I have often seen the prostate take on its volume and its functions reëstablish themselves in their normal state, in proportion as the granulations yield to treatment. Thus, in the prostate as in the rest of the canal, the granulations have the same character, the same progress, and yield to the same treatment; they act through a mechanism analogous to the mucous and the subjacent tissues. But here the analogies end, for the effects produced are not the same. So long as the contraction is almost exclusively due to the granulations, the engorgement of the prostate is well known to arise from other causes. They appear more frequently to arise from arthritic and herpetic diathesis, from scrofula than from hygienic influences whose actions are universally known. Of all the causes resulting from affections differing in their nature, but the symptomatic expression of which is somewhat identical, it is almost impossi-

ble to-day to arrive at a diagnosis with anything like certainty. We only hope that, with the era of endoscopic observations, we shall be able to elucidate the subject now so obscure to science. Already, the endoscope has permitted us to perceive the engorgements due to granulations. In the serofulous engorgements with ulcerations, it gives also some positive characteristics.

In effect, when these ulcerations remain for some time, they go beyond the limits of the mucous, and then, in place of a superficial denudation, the endoscope reveals to us a true ulcer, deep and ragged, presenting, in a word, the appearance of a strumous ulcer.

We had, at the commencement of the year, in our ward, a patient afflicted with strumous ulceration and tubercles of the prostate, with urinary fistula of the same nature, upon which these characters grew more and more distinct in proportion as the lesion progressed. This man left us, thinking he could find elsewhere a cure, which he despaired of obtaining with us. In the case of this gentleman, you are well aware that the therapeutic treatment is very limited, but, however, it will be in our power, thanks to the endoscope, to convey to these deep-seated lesions the same topical treatment which we have known by experience to act favorably upon lesions of the same nature in exterior organs.

A consequence attending fixed ulcerations in the prostatic regions of the urethra, which oftentimes injures the patient, are seminal losses. It happens oftentimes that they constitute a constant symptom, or even become habitual, in fact, they return with sufficient frequency to merit special attention; but so much the more, without having exaggerated the importance which we have attributed to them, we can but arrive at the conclusion that they may become exceedingly grave. But, whilst they derive their existence from the ulcerations, they seem to disappear of themselves, or by simple means after the recovery.

This lesion may return under two forms, one, which can be attributed to the irritation of the orifices of the ejaculatory canals, accompanied by lively sensations, and often by profound

pains of the perineum; the other, which appears atonic, comes on with little sensation, sometimes in sleep, without the knowledge of the patient, and without awaking him; whilst he is awake, if the patient wishes to accomplish his virile functions, the least excitation will bring on the emission, and, as M. Trousseau has said in his lectures, it can but result in a sort of impotence, to which we ought to give the name of "spermatic incontinence."

In the one or in the other case, but oftentimes in the first, the semen which the patient loses is often mixed with blood, which proves the existence of the ulceration. This symptom may appear equally in all ulcerations, but above all in granular ulcerations; the losses which accompany tuberculous ulcerations appear more frequently from the atonic form; those which proceed from herpetic ulcerations are less obstinate than the others.

Apropos to this subject, another very similar symptom presents itself, which very much surprises and astonishes him who experiences it: the patient, in his sleep, experiences all the sensations of a nocturnal pollution, he awakes, and, with astonishment, perceives that no liquid has been emitted.

The idea which naturally presents itself, is that of a deviation of the ejaculatory canals which directs the sperm towards the bladder; but without taking into account the disorders which it is necessary to admit must arise from a displacement or deviation of the ejaculatory canals, the patients which I have had under my observation formerly, from normal ejaculations and elsewhere, the most minute microscopical researches do not show any trace of spermatozoa in the urine. There had been then, in the few cases that I have observed, a false sensation, a sensation without an emission.

This phenomenon is not, like the rest, a certain index of a prostatic affection, for I have seen healthy men, perfectly well, from this country in particular, who had experienced it; only in these cases it did not return or renew itself, as in the case of the patients.

A symptom oftentimes more rare, and which I have seen

alike upon patients affected with granular ulcerations of the prostate, is a sensation analogous to that which accompanies coition, a sensation which becomes, for the moment, painful, or, as a patient said to me, "a voluptuous pain," which endures without interruption during the entire coitus, and oftentimes for weeks, and horribly fatigues those who endure it. In the two patients who presented this symptom in the highest degree, it was accompanied by a pain sufficiently sharp that the patient located it at a certain point in the neck of the bladder. These two cases prove, beyond doubt, some nervous affections which have a great resemblance to hysteria. The one most gravely affected, of my two patients, had become a melancholy hypochondriac and had given serious uneasiness to his friends, and distinguished physicians had attributed the entire affection to a nervous disease.

In these patients, the prostatic region presented a granular ulceration; one of them, cured of granulations, was at the same time embarrassed with pains and all the other symptoms which attend an old catarrh of the bladder. The other patient, cured of his granular ulceration, preserved his fixed pain, which he said had its seat at the left of the opening of the urethra into the bladder, at a point where the canal is continued with the vesical cavity. He entreated me always to pay particular attention to this point, assuring me that I should find there the cause of his difficulty. In fact, when I commenced, after having emptied the bladder, to examine minutely the border of the orifice of the urethra, I discovered to the left a small, well-marked, red ulceration as large as the head of a large pin, which resembled a small fissure. I touched it with a small crayon of nitrate of silver, the pains disappeared almost immediately, obscured by the pain of the cauterization, and did not reappear; the patient became perfectly calm. The patient returned twice, at somewhat long intervals, for his pains had revived, and the same treatment allayed them. For many months, the patient appeared to me to be cured. I met him from time to time, he did not speak of his difficulty, but from his exterior or general appearance, I am inclined to think that

this melancholy hypochondriac is completely cured, as also the lesion which produced it. I do not know in what class of diseases to place the cases of these two men.

We have seen seminal losses caused by the ulceration of the prostatic region of the urethra, but it is not necessary to believe that they always arise from this cause, for they may originate from diseases of different nature and often remote or distinct from the genital organs.

In the enumeration which we have made of diseases of the prostatic portion of the urethra, we have not spoken of cancer, because it determines beyond doubt some symptoms which report themselves from the bladder, and which cannot be relieved or cured without attention to this organ. We will, therefore, return to this organ at once and speak of affections of the bladder, and, above all, of those which pertain to the neck of this organ. We will now occupy ourselves, gentlemen, with an endoscopic exploration of the bladder, and, as we did with the urethra, we will commence by the study of its healthy condition.

In order to examine the bladder with an open sound, like those which we used for the urethra, it will be necessary to clear it, for if the extremity of the sound becomes clogged with mucus it will be impossible to proceed into the cavity of the organ, in order to explore all the points. It is necessary then that the bladder be full at the moment of exploration, and, in consequence, we must employ a sound which will stop the flow of urine and, at the same time, allow the rays of light to pass in.

This sound presents the same form as the urethral, but it has not a lateral opening, and terminates by a little prolongment around the end, which separates itself at an obtuse angle; in a manner, it resembles, in its general form, the prostatic sound of M. Mereier, the introduction of which is so easy, as we have said, especially when there is a swelling of the prostate. At the angle of reunion of the two branches, the sound is pierced in the axis of the long branch by an oblique opening, closed by a little plate of glass with faucets, plain and parallel, carefully and solidly set in with mastic. It is this glass which retains

the liquid and allows the light to pass through; it should be oblique, because if it was perpendicular to the axis of the tube, it would be less clear before the vesical cavity than the interior of the instrument, it would make a mirror and reflect the illuminated points situated in front of it, and prevent from distinguishing points situated beyond it. Thus, also, at night, when we direct a strong light towards the outside of a window, we see in the glass, as in a mirror, the inside of the apartment, whilst the exterior appears entirely obscure.

The extremity of the small branch of the sound can be screwed on, so as to facilitate the cleaning of the interior face of the glass, this, however, is rarely necessary. We must be careful that the small addition be always well screwed on, so as not to let the liquid pass through it, for the smallest drop in the interior of the sound will interfere with the rays of light. You will easily understand, gentlemen, that if the bladder should contain a turbid liquid it will be impossible to distinguish anything of its interior structure, whilst it is diseased it is rarely that the urine is not made turbid by mucus, pus, or blood, and often by these three liquids mixed in various proportions, it will then be necessary to empty the bladder by the aid of an ordinary sound, which will serve also for the purpose of injections, so that it may be washed out.

When the water of the injections becomes very clear, then we may withdraw the ordinary sound and replace it with the "sonde a vern" which we have just described. Upon this sound we shall place the apparatus, which we have described in our first lesson, and shall then commence to examine. In an open or clear bladder, there is nothing to constrain the movements of the instrument, we can thus explore the smallest part of the internal surface of this organ, even to the border of the prostate, the vesical triangle, and the superior and inferior fundus. The anterior face escapes the examination; I have essayed to make this accessible, by means of a mirror placed at the extremity of the long portion of the sound, in front of the lateral opening, but the clearness not being sufficient, the field of vision is considerably curtailed, and, in fact, the result

amounts to nothing. I have not yet, however, renounced the hope of being successful, but, for the present, we must content ourselves with examining that portion which is accessible to us, then, by a happy coincidence, this portion is precisely the one which is most often diseased, and that which escapes our examination very seldom offers anything of interest.

We shall now learn, through the endoscope, the physiological condition of the bladder. The mucous membrane of the bladder presents a healthy and smooth surface, and a color analogous to that of the urethra, but ordinarily a little more pale, it is of a yellowish white, slightly rose tinted.

In certain subjects it presents, here and there, a number of superficial vessels, very minute, which are seen to appear at different points, and ramifying themselves, take very tortuous courses. Very often, these vessels are not seen in a bladder well filled, and one cannot perceive in the points which present themselves in the field of the instrument, that the surface is smooth and the color uniform. The only particularity that we have noted is, that we can reconnoitre, whilst it exists, the transverse angle or point which limits the "trigonum vesicale" from behind, and extends between the orifices of the two ureters. In regard to the size of these orifices, I have not cared to speak to you, because it is unnecessary.

In order to examine the urethral orifice, it is necessary to withdraw the sound as far as where the glass commences to reënter the urethra, then we commence to perceive the inferior part of the visual field, the border of the prostate, under the form of a small crossing from the superior concavity. This part is habitually more red than the vesical mucous membrane, and as the border which it forms intercepts the rays of light, the surface of the bladder oftentimes appears of a deeper color.

If we carry the extremity of the sound to the right or left, we can follow the contour of the urethral orifice; but, as in a moment, one loses the borders of this orifice, at the same time that it passes away, in place of appearing circular, its contour forms a crook, elongated transversely. But the state of health as we pass to the disease, commencing with the case which ap-

proaches least to a normal state, we shall find the borders of the organ anæmic and the congestion characteristic, the one by its pallor, the other by the redness of the membrane, in which the vessels become oftentimes more apparent. I have encountered the anæmic pallor in chlorotics or very feeble patients, and oftentimes in some cases of neuralgia of the bladder in chlorotic or debilitated subjects, the dilatation of the capillary vessels, with or without redness of the mucous membrane; sometimes, likewise, they detach themselves upon the healthy membrane, and oftentimes it is the only lesion which the endoscope shows in patients affected with hematuria, without calculi or organic affections. In this case, we often diagnose varices of the neck. They perhaps exist sometimes, but more frequent from my observations, already sufficiently numerous if one can suppose that the blood be furnished by the varices. There are some capillary varices which extend themselves over the entire membrane, or at least a great part of it.

Without these vascular dilatations in the case of hematuria, we encounter, sometimes, some ecchymoses of the membrane, sometimes considerably large and irregular, sometimes small and lenticular. I have observed, in two cases of scorbutic hematuria, that the color somewhat resembled a violet tint. I shall reapproach these light affections, grave without doubt, but more so in appearance than reality, the diagnosis of which would be difficult without the aid of the sight.

We shall meet with subjects which are taken, it may be in full health, or it may be in the course of some light affection or habit of the urinary functions, with violent pains of the neck of the bladder, with vesical tenesmus, hematuria, retention of urine, more or less complete; these symptoms, after a variable duration, subside rapidly, sometimes suddenly, but often they return at intervals more or less in length.

With like symptoms, and in spite of their complete subsidence, for sometimes there is no rest between the attacks, it is difficult not to believe that probably a grave and organic disease of the bladder exists, then whilst we cannot diagnose any tumor by catheterism. I have often known given, and I myself

have held, in similar cases, an unlucky diagnosis. It is difficult to avoid it with the ordinary means of diagnosis; but apply the endoscope, examine the bladder with care, and you will find an exaggerated development of the capillary vessels of the mucous membrane.

Whilst I have had occasion to observe some cases of this kind, it was upon patients subject to attacks of gout and rheumatism, and some vesical affections so closely resemble arthritic affections that I have been almost obliged to attribute them to the same cause, and as I regard this abnormal dilatation of the capillary vessels as one of the effects of arthritis, for the same reason that the capillary varices of the inferior members and of some other parts of the tegumentary system.

After the congestion of the mucous membrane, we arrive naturally at its inflammation. Acute cystitis cannot exist without danger or without pain, it cannot result in any advantage to the sick to practice an exploration by the aid of the endoscope, but if it be only chronic cystitis or sub-acute, and of that which accompanies the presence of calculi in the bladder, then it is practicable to examine without danger, and with utility, and to make an exact diagnosis of the lesion. In the first degree, we find a general redness with development of the vessels, which are oftentimes more numerous but less dilated than in the affections of which we have spoken.

In a degree more advanced, the redness of the mucus is more intense, and we cease to distinguish the vessels which are confounded in the general well-grounded tint. So that, in certain chronic cystitis, for a long time there is a general ramollissement of the mucous membrane which has lost its epithelium, and the surface of which has become uneven, rugged; in the autopsy we find it black, in consequence of the alteration which, after sudden death takes place in the gorged bloodvessels. In this case, it is often difficult to separate the bladder from the pus that it contains, and of which the thickest part rests adherent to the ulcerated surfaces, but if you proceed to fill the organ with limpid water, you will find the membrane of a deep red in places, and presenting the same rugged aspect that we see in

the autopsy. In the other parts, the pus which could not be washed away by the injections hides from you the state of the membrane; but the presence of this purulent layer, which we also cannot detach from the end of the sound, is already a proof of the ulceration of the bladder, and a lesion very grave upon its surface.

Before quitting this subject I will call your attention to a patient which we have lately examined. From his entrance he presented already some time since, some symptoms of cystitis; the micturition was accompanied and, above all, followed by pains; the urine contained pus; and he had had a little hematuria. We suspected a calculus, but the sound did not show any foreign body. The endoscope showed us the vesical membrane of a deep red, surrounded by an abundant network of vessels of a more lively red, the border of the prostate was red; but that which was most notable, was a development of round red points, larger than granulations and more regular than flesh buds. I had some difficulty to satisfy myself in regard to these growths, however, their appearance leads me to suppose that they are simply inflammatory.

The following confirms this diagnosis, for after some time of repose, from baths and antiphlogistic treatment, all the symptoms disappeared, and then, on a last endoscopic examination, the bladder and the prostate had recovered their normal appearance; the prostate, in particular, had again become smooth and even, as in its natural state.

We have already had occasion to speak of the engorgement of the prostate, and also of urethral ulcerations, which are sometimes the cause, but we have said nothing of the endoscopic character of the swelling which follows.

The engorged prostate can acquire a considerable volume; and, as you know, makes a lump in the cavity of the bladder. Its volume can be appreciated by the depth to which it is necessary to pass the sound, in order to penetrate into the organ and touch it through the rectum; its prominence in the bladder and its measure, with sufficient precision, may be known by means

of the catheter of M. Mercier, but through the endoscope we can sometimes know more, the disposition of it. A first particularity which strikes the observer is, that, in withdrawing the sound, instead of seeing the border of the prostate rise gradually into the field of the instrument, it follows the surface of the glass in the form of a curtain; we see it from the bottom to the top, formed at the end of the instrument, like the action of the sucker of a pump, it relieves itself after being pressed. If the instrument rests upon the middle portion of the lobe, which was thus placed before the sound, it turns from behind and appears difficult to free the passage. It seems like a cover or lid which appears to shut upon itself and raises itself. When we have seen this appearance it is impossible to confound it with the normal state.

Whilst afterwards following the contour of the vesical orifice, we find that its inferior part, in place of a crescent with a superior cavity, presents a convex line towards the top, and, in thus following the border of the middle lobe, where the prominence is situated which it forms in the bladder, the middle lobe, engorged, offers, in general, a contour uniformly round, whilst it is not an organic affection. However, upon a patient who had been operated on several times, by a section of the prostatic valvule, and who had had an abscess of the prostate opening into the bladder, I have found an irregular prominence with deep holes, which resembled a hard damaged substance, which the organ had formed in the hypertrophied lobe by the cicatrization of the abscess.

Since the time that I have applied myself to the endoscope, I have not had the occasion to apply it to tumors of the bladder, properly so-called; but, finally, we had in our wards two cases of cancerous degeneracy of this organ and of the prostate. These two patients had experienced dysuria, and had entered into the hospital because they had been seized with complete retention; their urine was very turbid, and they had considerable hematuria, particularly one of them. Rest and treatment had mitigated the pains of the retention, and then certain specific pains manifested themselves, which, above all, had sometimes a

freely lancing character. Upon one of these patients, the sound had not detected any tumor, only it sunk very deeply before it arrived in the vesical cavity. On examining with the endoscope, it was impossible to perceive the border of the prostate and the orifice of the urethra, it was found that only one surface continued itself from the prostate to the "bas-fond" of the bladder, and passing up very high into the organ; this surface, of a yellowish white, with the vessels sufficiently developed, formed nipples, large and very prominent, and presented at a place ecchymoses of a deep red, which had all the appearance of an encephaloid mass. It appeared to form a large prominence badly confined or limited, in a manner, although the sound not being well free in the bladder, could not exactly circumscribe a tumor. Upon the other patient, catheterism did not discover anything in the bladder, except some inequalities, which were situated around the fleshy columns; but at the neck there was found, by the aid of the endoscope, a prominence, considerably large, of the middle lobe of the prostate; you have seen all the observable face of the bladder strewn with soft vegetations, of a reddish yellow, forming small teats or nipples, and presenting the same aspect and coloration of encephaloid vegetations. The prostate makes an inconsiderable prominence in the bladder, it is true, but presenting the same aspects as in the vesical wall.

The sediment in the urine of these patients, and examined by the microscope, contains, besides globules of pus, great nut-like cellules, which presented the character of cancerous cellules. These cellules were very numerous in the urine of the second patient.

The group of symptoms and, above all, their persistence, the cachectic appearance which these patients had acquired by degrees, then likewise as the local symptoms appeared a little calm, and the microscopic examination of the urine could give some strong presumptions; but without the endoscope, there is but little degree of certainty in the diagnosis, and I wish you to notice that this diagnosis had been made in the two cases, after the results of the endoscopic examination, before the

symptoms had furnished suspicion of the nature of the evil, and whilst the tint of the skin did not yet betray the development of the cachexia.

If we consider how few means we have in order to assure ourselves of the nature of a tumor, which the sound has reconnoitred in the bladder, how little certitude of differential signs of these tumors between themselves, so much so that the cachexia is not evident, and with danger of attack from a cancer which we cannot completely destroy; we are really astonished at the hardihood of deciding either for the ecraseur or for the "arracheur."

You will be convinced, I think, that the endoscope has already rendered a grand service to the surgeon and the patient, if it prevents the performing an operation on a cancer, of which the result must be a speedy death.

It rests with us to speak to you, gentlemen, of an alteration which is the consequence, for the most part, of affections of this viscera. You know that whilst the bladder empties itself with difficulty, in consequence of some obstacle in the course of the urine, it happens, about a certain time, that the bundle of muscular tunic becomes hypertrophied and makes a prominence upon the internal surface of the organ, the mucous membrane being enfolded in their intervals, and from it results that we call "bladders with columns," and "bladders with cellules."

In this case, these columns hinder the ordinary catheter, whilst its point passes on the mucous membrane, giving the sensation of prominences which it meets, but it is necessary for this that the columns be already sufficiently voluminous; but, still further, other prominences can be diagnosed in the bladder, from tumors, from cancerous vegetations, or otherwise, also this—mistakes are not very rare, and we arrive at the belief, from columns in the smooth bladder, of mistaking columns for tumors, and reciprocally.

The endoscope enables us to avoid these errors, and, therefore, they have become more rare; it shows the columns under the form of "cordons arrondés," as you see them in the autop-

sies, with their more salient points very clear, and the adjoining parts in the shade. Whilst these prominences are large, their two borders do not show themselves simultaneously in the field of the instrument, and it becomes necessary from small movements to measure the larger. It is easy to follow in the way of their length, and then we see them united, then divide themselves, intercepted between them some depressions in the mucous membrane or the veritable cellules.

Whilst we can thus reconnoitre their form, it will be impossible to confound them with any other thing, so much the more as they present the general color of the mucous, whether it be sound or inflamed, and which is not the same, frequently, of tumors, which have in the bladder, as elsewhere, their particular coloration.

We will terminate this exposition of the results of the endoscopic examination of the urinary passages, by leading you to a knowledge of the means which can be taken for the exploration of the vesical calculi. In order that this exploration may succeed, it becomes necessary to direct the axis of the instrument in the direction of the foreign body. As soon as this condition is obtained, it is easy to verify the color of the calculus, and, from certain movements, to reconnoitre the aspect of its surface, its smoothness, its nipple-like prominences, irregularities, or unevenness, if we carry the end of the sound upon the contour of the calculus, or can get an exact idea of its form, and likewise appreciate sufficiently well its volume; however, for persons who have not yet the proper arrangement of the instrument, the dimensions of the object appear, frequently, a little larger than they really are. But this error is very far from attaining the extent of those to whom it is exposed by the other means of exploration, and, in a practical point of view, it is of little importance. For, if the exact measure is necessary, it is easily obtained. For that, it suffices to mark well how many times the field is limited by the extremity of the sound, how many times it finds itself contained in each of the principal diameters of the calculus.

The interior diameter of the sound being known, we can con-

clude on the dimensions of the calculus with a quite sufficient exactitude. It is very rare that the surface of the stone be sufficiently smooth, so as not to furnish points of observation. It is thus that our designer, M. Lackenbauer, has been able to measure the different calculi which he has represented, and of which you have seen the designs. These measures have been proven just, upon certain ones after their extraction, and upon others whilst they have been taken in the "litholabe," in order to be crushed.

Before going much further, I will give you some details in regard to the calculi, from which I have made designs after nature, in the bladder of the patients, before they were operated on. One represents a group of four calculi, which brought a sick man into my service in the month of February, 1862.

In the month of October preceding, he had consulted a surgeon, who had proved the presence of some gravel, and had scraped some debris into the grasp of the litholabe. Some days after, the surgeon introduced the instrument anew, and not finding any fragments, declared the patient cured.

From the first examination by the aid of a sound, I proved the presence of a small calculus, very moveable; such was also the diagnostic of a confrere, well versed in catheterism. Some days after, the endoscope showed us the four calculi, such as they have been designed by M. Lackenbauer, on the 9th of March. The 16th of March, a new examination enabled this artist to design them in the two groups, in each of which one of the small calculi is found hidden. The endoscope had permitted, at first, to verify, at the "bas-fond" of the bladder, a large depression, very deep, but in which the calculi had collected, so much that the rest of the vesical surface was covered over by the fleshy columns very much developed. After two seances of lithotrity, the endoscope proved the presence of fragments. It became necessary to seek these fragments, which the bladder could not get rid of, on account of the commencement of paralysis and hypertrophy of the prostate.

Some days later, the patient, who did not suffer any more, was taken with stoppage or extreme difficulty of breathing, and succumbed to an old disease of the valves of the heart.

The autopsy showed the depression of the "bas-fond" of the bladder and the columns which the endoscope had discovered. At the first scance of lithotritry, in seeking to measure the calculus, I have always found by a very great scattering of the branches of the litholabe the greatest of the diameters transversely of a large calculus. This is the diameter which finds itself in a sence-antero-posterior.

After the configuration of the calculus, it appears evident that they are not fragments of a calculus greater than had been broken by the first surgeon.

It is very evident that the view of a calculus will add something to the certainty that the touch will give to its presence. But you may say that there are some causes which render very difficult the finding a stone in the bladder. Thus, whilst it is small and very mobile in a very large bladder, in a way it flies before the sound, without giving place to a sensible shock. In this case, the sight cannot leave any doubt, and it suffices by a *coup d'œil* thrown upon the Fig. 5, to convince that a gravel cannot escape, provided that the sound can be directed towards it. The rugose state, smooth, broken of the surface of the calculus, display themselves more surely than by means of the sound, and there is no other means of appreciating the color, which often permits you to presume upon the composition.

Simple catheterism gives us but a few precise ideas of the dimensions of the calculus; the litholabe likewise; but it cannot comprehend it in one sense, neither can it give the measure of all the diameters, for it is known that each calculus affects, in general, always the same position, determined by the relation which exists between its form and that of the bladder. The endoscope, on the contrary, shows all the diameters, so much more than one can accomplish with the aid of the sound, by displacing the calculus and making it present in different positions.

The number of the calculi is, again, an important condition for the treatment, and difficult to know by the ordinary means. Beyond doubt, in seizing a calculus in the grasp of a "brise pierre," and in seeking to explore the "bas fond," we can as-

sure ourselves that there exists a second. But, if there are two, three, four, or more, we can perceive them, so long as the endoscope permits us to count them.

I have not had other occasions of observing multiple calculi, but upon the cadaver it is easy to perceive a great number of stones introduced expressly into the bladder. If it is important to verify the presence of a calculus, and the different particularities which it is necessary for us to know, it is just as important for us to know that it does not exist as it is that it does. This error, however, can present itself, it has had a place and it still remains in the annals of medical science, some cases of patients having been cut without having a stone. Authors indicate many causes of this terrible error, the principal ones are, hard matter contained in the rectum and pressing against the base of the bladder, it appears to me difficult that in this case the contact should be sufficiently rough to deceive a well practised hand; it is not the same of an osseous tumor of the pelvis making a prominence in the bladder, and which can give, well covered by their tunics of this organ, a sensation of hardness capable of deceiving the surgeon, or very much to embarrass him.

A fleshy column, resisting, has also been noted as a cause of error; it has been well objected, too, that it had not a hardness comparable to that of the stone, but I can tell you by experience that it is from cases of induration of the vesical walls when the fleshy columns are sufficiently hard, that it is very difficult to distinguish the sensation which we experience in touching with the end of the sound from that which is caused by contact with a calculus.

In addition to this, sometimes the mucous membrane, in old affections of the bladder, becomes encrusted with lithic matter. Then you have the resistance of a hard body and the rude touch of a stone. In this case, it is almost impossible, by the aid of the sound, to assure ourselves of the truth.

It can be objected, perhaps, that the question can be solved by means of the litholabe, but, very often, it leads to the belief of an adherent calculus, and the manœuvres by which it seizes

the vesical prominence and presses it in the grasp of the instrument, in seeking to displace it, cannot certainly be without danger. I have often had patients who presented this disposition, and whom I have observed at the Hotel Dieu, whilst I was surgeon of the Central Bureau. The sensation was that of a calculus. I requested Ph. Boyer and Leroy (d'Etiolles) father, who had come into the service, to give me their advice, but after a very attentive examination it was impossible for us to decide on a certain diagnosis, and we could not decide on anything, if it was not that the sick man being in a very bad condition to be operated on, we should have decided on it. Some days later, the autopsy showed us the alterations which I have spoken to you of. If I had had the endoscope, you do not doubt, I think, after all that you have seen in this amphitheatre, that the question could have been decided while the patient was living.

One question which presents itself very often, and which is of no little importance, is that of the adherence or enchainment of the calculi, upon which often depends the mode of operating. One suspects this enchainment whilst the stone is always found at the same point which we can displace, whilst the instrument glides smoothly over the surface without moving it; but it is rare that we arrive at a certainty without opening the bladder. If we survey the observations of united or chained stones you will perceive that often this disposition had not been perceived, except during the operation, whilst the forceps could not seize the calculi, or to hold them after having seized them.

From it results a very embarrassing position, when the surgeons have often given proof of *sang froid*, of ability, of promptitude, and of decision. But if sublime has been the success, it will be of more value in operations less difficult, and operators will prefer to know in advance the difficulties they have to encounter.

By means of the endoscope, we can assure ourselves of the disposition of the calculus, and of the causes which render it immovable. In effect, in this case, one finds around the calculus some clots of mucus, of prominences, of vegetations, which fix it in its place. I have not yet made sufficient observations

in order to give you a description of the different modes of enchainment, but the following observations can supply them in part:—

The first, is that of a calculus, which I have examined and made a design of, from the Hospital Saint Antoine, in the service of Prof. Jarjavay. The patient presented the rational signs of a calculus, which M. Jarjavay found, in fact, by catheterism. But this calculus was difficult to reach, the litholabe could not seize it; at the same time, it could not be determined whether it was fixed or moveable. However, M. Jarjavay suspected that it was fastened, but not being fully satisfied, he requested of me the aid of the endoscope. The endoscope resolved the question completely. The calculus was, in effect, retained between the projections of the bladder; the right extremity appeared to be free, the left extremity and the superior border being surrounded by a ridge of the mucous membrane, and the inferior border, finally, is in part hidden by a veritable tumor, upon which is noticed an ecchymosis, which appears to result from the pressure of the grasp of the litholabe, in the forceps made to seize the calculus, proving that if the expert surgeon had insisted upon his tentatives, it would have resulted in a wounding of the vesical mucous membrane. The endoscope would have prevented, beyond all question, a similar accident.

The second observation was furnished me by M. Houel, temporarily in charge of the surgery at the hospital clinics, during the last vacancies. The irritation of the bladder in his patient prevented me from making a design of this calculus, but M. Houel has earnestly requested me to give the following observation, in which the autopsy confirmed the results of the endoscopic examination:—

Calculus fixed to the Bladder—Examined with the Endoscope.

J., aged 58 years, a paint merchant. This man was very large and strong, but he appeared to be suffering much. He said to us, that for many years he had suffered much from the bladder. He is obliged to urinate very often; the micturition is painful and very difficult.

Whilst he walked, he felt a feeling of weight in the perineum; he often had pains of the kidneys. For five or six months, he had lost his appetite and had become thin and poor; his urine was very turbid and deposited a sediment of mucus, very thick, sometimes mixed with blood. Never, in addition to what we have said, had this patient seen his jet of urine suddenly arrested, except to return some moments after.

Whilst a sound is introduced into the bladder, mark that which is observed: the canal of the urethra is free and allows the sound to pass easily. One time that it penetrated into the bladder, we could reconnoitre a bladder of reasonable dimensions, with columns, a bladder very smooth. If we carry the pavilion of the sound a little higher to the left of the patient, we perceive that the end of the sound is arrested by a stone, which, by consequence, ought to be found at the base of the bladder and to the right. In introducing a lithotripsy instrument, it is impossible to seize the stone; we touch it but it will not fall into the grasp of the instrument, and we cannot seize it.

This examination, repeated several times, induced M. Houel to diagnose a fixed calculus of the bladder, although M. A. Richard, in sounding this patient, believed the calculus free, because the end of the instrument dragged the calculus and the bladder. M. Houel solicited M. Desormeaux to dissipate the doubt, by means of his endoscope. I will not enter into the details of his mode of action, which is known by all surgeons; I will speak of nothing except the result of the observations.

In manipulating the instrument into its necessary manœuvres, one can see, in turning the instrument in divers ways, a whitish granular body, strewn with small blackish points which appear to be blood. This body, which is no other than the calculus, presents a light or small prominence; and, if we should move the instrument, we arrive at the edge of the calculus, and we see very distinctly that this white body is surrounded and, in part, covered by a reddish membrane, which is continuous with the vesical mucous membrane.

This examination confirmed, very closely, the diagnosis of

calculus fixed in the bladder. In the face of this condition, M. Nélaton had counselled the sub-pubic incision, and M. Houel commenced the operation, when the patient suddenly died.

The autopsy gives the following signs or appearances:

The bladder is not very much changed; the calculus is well situated at the place which the examination had given to us; the calculus is well covered by the bladder upon its borders, but at this level the bladder is a little hypertrophied, likewise, the calculus is strongly held by the bladder; furthermore, the calculus presented an eminence, which penetrated the vesical walls, where it was contained, as in a cellule; the calculus had yet the black points that we have upon the living. One point, sufficiently curious to note, is, that to the naked eye the calculus appeared less voluminous than with the endoscope.

If we resume this lesson, we will find that in the affections of the bladder, the endoscope oftentimes gives more of certainty in its diagnosis than the other means; it permits us to see the state of the organ, to reconnoitre the nature of its tumors, the disposition, the number and the complications of stones, oftentimes better than simple catheterism; better, and, likewise, with less danger, than the "litholabe."

We shall then conclude that if we cannot, in the vesical affections as in the affections of the urethra, proceed directly to operations, it is not less useful to the treatment, in furnishing valuable indications to determine the choice of the method for operating, and to direct the instruments in the operation to be practiced.

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THE
ENDOSCOPE,
AND ITS APPLICATION TO THE DIAGNOSIS AND TREATMENT
OF AFFECTIONS OF THE
GENITO-URINARY PASSAGES.

LESSONS GIVEN AT NECKER HOSPITAL.

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